

INDUSTRIAL-ARTS MAGAZINE

Incorporating: **HANDICRAFT** and the **ARTS AND CRAFTS MAGAZINE**

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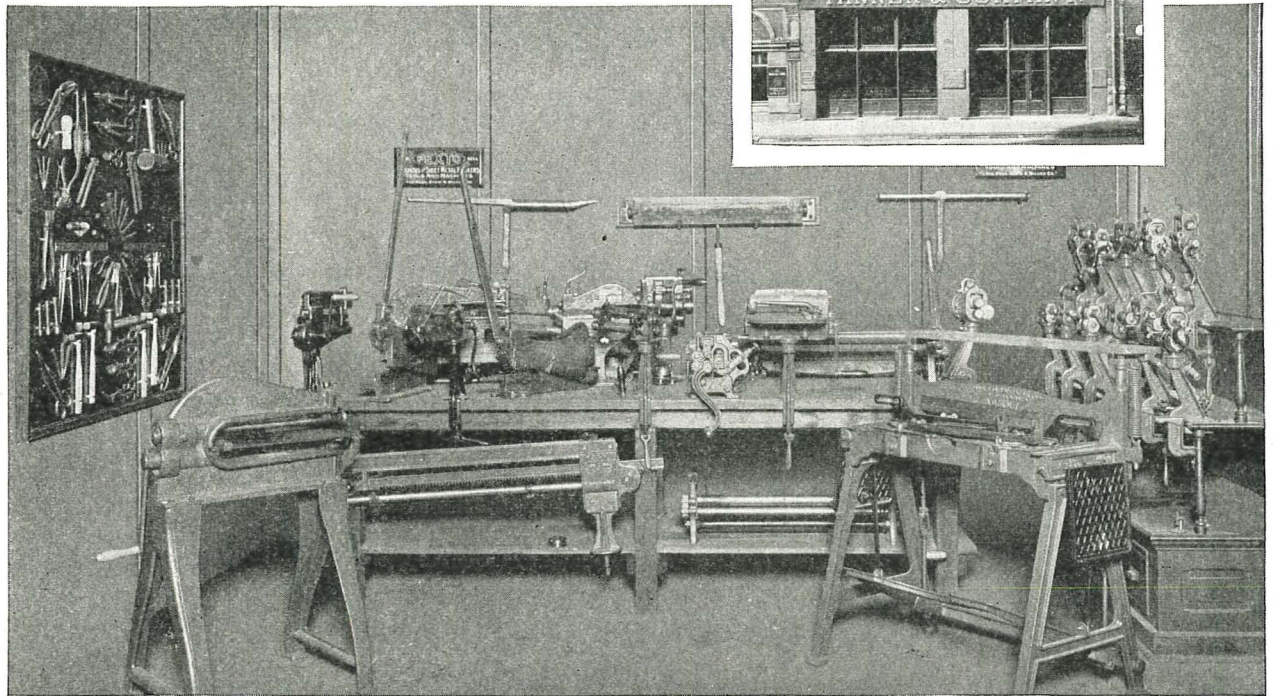
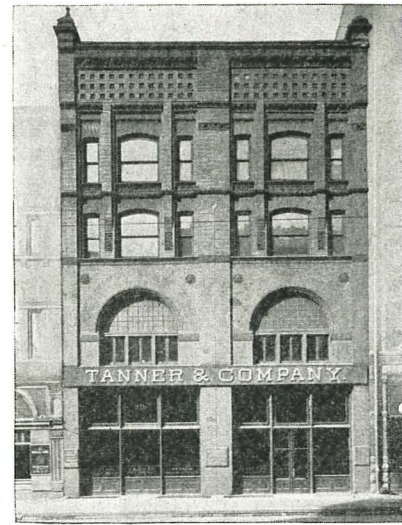
The Board of Editors invites contributions of all kinds bearing upon the Industrial-Arts Education, Manual Training, Art Instruction, Domestic Science, and related subjects. Unless otherwise arranged for, manuscripts, drawings, projects, news articles, etc., should be sent to the Publication Office in Milwaukee, where proper disposition will be made. The Board of Editors meets once or oftener each month in Chicago, and all contributions submitted are given careful attention. Contributions when accepted are paid for at regular space rates. In all cases manuscripts should be accompanied by full return postage.

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PEXTO

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THE ARTS OF PEACE

Edward J. Lake



THIS Association meets for its twenty-fourth anniversary under the most portentous circumstances of its existence. Every teacher feels the importance and the uncertainty of these conditions. The injunction to "prepare for war in times of peace" has not been, and may never be, followed by lovers of peace and democracy. A continuous efficiency for war is incompatible with the greatest efficiency of peace. No civilized nation or individual can do best for war *without* a sword hanging overhead. No nation or individual can do best for peace *with* a sword hanging overhead.

The arts we represent are the arts of peace, yet in a particular way efficiency in the arts of peace may settle the present strife. It should be significant to us that the country which is now pitted against the world has been able to hold out against such odds by virtue of efficiency in peaceful as well as war-like pursuits. Indeed it is becoming more and more evident that the ultimate result will prove the arts of peace victor over the arrogant arts of war.

But this time is portentous for this association not only because of unsettled conditions of the country, but because of the rapid change and unsettled conditions of our work. Our constitution and by-laws when amended as proposed by the committee will voice these changes. We will have a name more comprehensive of our growing interests. The objects of the association as expressed in our name and constitution will be extended to include the advancement of art, manual training, household arts and allied subjects in our schools. These "allied subjects" include training in such vocational work as each community offers. We would emphasize the necessity of art in all of these interests as we believe art is a necessity to civilization. Yet our conception of the arts and our methods of instruction in them are changing rapidly.

This association stands for one distinctive method in the teaching process. This method is the effective operation of learning thru doing. Our energies are directed to the end that the school experience of the youth shall be both mental and manual. We believe that mental and manual effort in combination are essential to the progress of education. We believe that these elements are inseparable in the de-

velopment of the individual and of the nation. No democracy can relegate its learning to one class and its labor to another. In a democracy all must be educated to work thoughtfully and skilfully. This association has enlisted teachers of various manual activities. Indeed, the list of these activities has increased until the association now represents more subjects of instruction than the whole common-school curriculum offered a quarter of a century ago. Even the original subjects from which the association took its name have changed in purpose and method beyond recognition.

It is indeed a responsive organization that can keep pace with such rapid change, and it is not only necessary for this association to keep pace with movements in its field of activities but to lead in these movements.

It is one of the obligations of this association to define the aims of the school work it represents. Since these aims vary with conditions they must be defined under conditions. Art is conceded to be an essential element in each of the various kinds of work given under the name of the industrial and domestic arts, yet the methods of art instruction are much in question at the present time because of a lack of defined aim under conditions. Our work needs continual adjustment.

I read the following from the President's address in one of our annual reports:

"What is needed: a little adjustment, or should I say a little *more* adjustment, for as I read the history of the teaching of art, domestic science, and manual training it has been adjustment from the very first. We need to lay an emphasis upon the actual shop methods if we are manual training teachers; the actual home conditions and those which will make homes if we are domestic science teachers; or the exact commercial practice if we are teachers of drawing. These things we have not always done. And how can we do them? By first getting acquainted with actual conditions; by actually working in them; and then using our teaching experience to make use of this knowledge and experience in a way that the shop trained individual without supplementing his present experience by years of study and teaching preparation cannot do."

From another president's address in our annual report I read this idealistic statement:

[President's address delivered at the twenty-fourth annual meeting of the Western Drawing and Manual Training Association, Lincoln, Neb., May 2-5, 1917.]

"Our real problem is not how can we obtain better work, but how can we raise its highest power, this inner alchemy whose self-impelled activity alone can dissolve facts into laws, and make them over into personal usable gold." "When we can forget how practical, scientific and commercially successful we are, long enough to see beauty that is not measured by what it costs, but whether its appeal is to the spirit as well as to the eye or ear."

Here we have two distinct appeals. The one for specific purpose and work with actual conditions consistent with that purpose. The other solicitous for the development of that ideality and individuality which we all believe the most rare and valuable product of humanity. These appeals are not contradictory, nor are they inconsistently made to this association. They do suggest the variety of our aims.

We call ourselves the teachers of the arts. Art involves certain fundamental principles which if understood in their application to concrete production will throw some light upon our diversities and adversities. I need not attempt to define art, but we do know that the principles of art are tangible and teachable. So our instruction must be tangible. We may lead the pupil to a desire for beautiful things in preference to ugly things. How? By developing the child's interest in beauty. "But," declares the critic, "he has no such interests." Truly he seems to have no aesthetical judgment, but he has interests that are realistic and dynamic. Set these interests into action. Direct them by continual example and comparison, and not by personal opinion or rule. There was never an art teacher who could recognize all forms of beauty on sight or by rule. One great difficulty with our art instruction has been that the natural realistic interests of the child have been excited thru graphical work, but not directed to aesthetical conception by continual example and comparison. Then come the applied arts and the child has been directed in the construction of useful things. The idea spread like a prairie fire.

"All of our instruction must be applied to the making of some constructed thing" said the manual training teacher. Now the constructed things made under the name of manual training have been dry enough, and the fire soon burned out the dynamic interest it fed upon. The reason was not far to seek. A series of set exercises reduced to a formality of procedure that allowed of little choice and initiative never can be more than disciplinary.

But you say this is an old, old story, and we do not do things this way now. One must confess that there has been a great change. The change, however, has not been so much in the direction of more educative methods as in the variety of things done in

the name of manual arts. With the introduction of the industrial idea there is no end to the variety of materials and projects used in the manual arts classes. That there is still a poverty of design cannot be denied. The manual training teacher is not at present adequately trained in the principles of design and construction to lead his pupils toward good creative work in the various materials used. The increase in the kinds of material used has increased the possibilities and responsibilities of the manual training teacher, for a good design must have fitness to material as well as purpose. If manual training persists in the schools its purpose must be clearly defined and a content of subject matter developed to serve that purpose.

With regard to the realistic drawing of a few years ago in the name of art, we now have a radical departure from graphical work toward synthetic study and applied design. Drawing and the teaching of it is now neglected. The teaching of art thru drawing is neglected. In some schools it is abandoned, and children do not now even attempt to draw. This tendency to disparage drawing as an end in school work and to neglect it as a means to the end of developing aesthetical conception is the result of making our work more industrial and applied. It is the common conviction of the teacher of drawing that this result is not warranted. Drawing has never been well taught in American schools as an end in itself. As a means of supplementing other instruction it has been used only indifferently. Teachers of drawing in the common schools of America are notoriously unable to draw. Drawing as a means of impressing and expressing conception is far too valuable to be neglected. We need much more and better use of it. The synthetic study which has replaced drawing is logical and excellent. I believe it has been the greatest factor in bringing up the standards of taste in design in the United States. Art instruction in the common schools has reached thousands of homes thru thousands of children impressed with conceptions of beauty and propriety. No other agency has been so effective in this direction as the synthetic study in our manual arts work, and no other agency has equal possibilities for the future. Yet in our progress toward what is best we must hold fast to that which is good, and I am convinced that drawing will survive as the means to the end of formulating and developing the individual impression. For effective instruction aims must not only be definite but methods must be operative and adapted to the particular aim of each particular kind of work. It is the function of the association to standardize and promote the variety of school instruction which is represented by its membership.

The Academic Course in Prevocational Schools

John C. Brodhead, Associate Director of Manual Arts, Boston, Mass.



CERTAIN boy was graduated by Ella Flag Young, principal, from a Chicago grammar school back in '85, at the foot of a class of some 45 or 50.

That same boy at the end of his first month in the West Side High School, under the same school system, stood at the head of his class. And while he did not hold that enviable position throughout the year he did average high enough to secure a scholarship in the old Chicago Manual Training School, of fond memory.

Now why did he so nearly fail in the grammar school? For lack of pertinency and interest. He remembers, to this day, the way history, his Waterloo, was presented. Why did he thrive, educationally, in the high school? Because of his interest in the studies there presented, notably mathematics and modern language. Why then did he go to the Manual Training School? Because of increased interest and pertinency.

Despite all the knocks at manual training it yet is true that some colleges were willing to credit a year's work in the case of the Chicago Manual Training School altho its course was but three years, that most educators have conceded that pupils do their academic work better in the time remaining after the introduction of manual training than before, and that manual training prepared the way, among pupils, teachers and the public, for the intensive forms of trade education fostered by this association.

It is also true that the workings of industrial education are causing manual training to take on more of a prevocational aspect than formerly.

The prevocational or pre-industrial school is, I take it, concerned with the education of the boy or girl who is passing thru the motor minded stage, who would like to experience education instead of endure it or who rather expects that he will at about 14 years of age enter a trade or a trade course.

The industrial or domestic arts course in an intermediate or junior high school may be prevocational, if pupils have the opportunity of experiencing the routine of several trade activities.

Teachers of most all subjects are today, either because of internal illumination or external pressure, making their subject matter and illustrations bear on the world life of today, but it has remained for the prevocational, trade and continuation school teacher to make education pertinent to *each* pupil *each* day, to get, from the pupil's daily work and interest, the point of departure for each and every lesson.

We must frankly acknowledge that we have passed the time when any one can compass all the educational subjects that could profitably be undertaken even in the elementary school. So let us restrict ourselves, in prevocational courses, to *arithmetic*, *English* (spoken and written, including reading and spelling), *history*, *geography* (these last two preferably treated as one), *hygiene*, *drawing* and *choral practice*, and there should be much interrelating of all these.

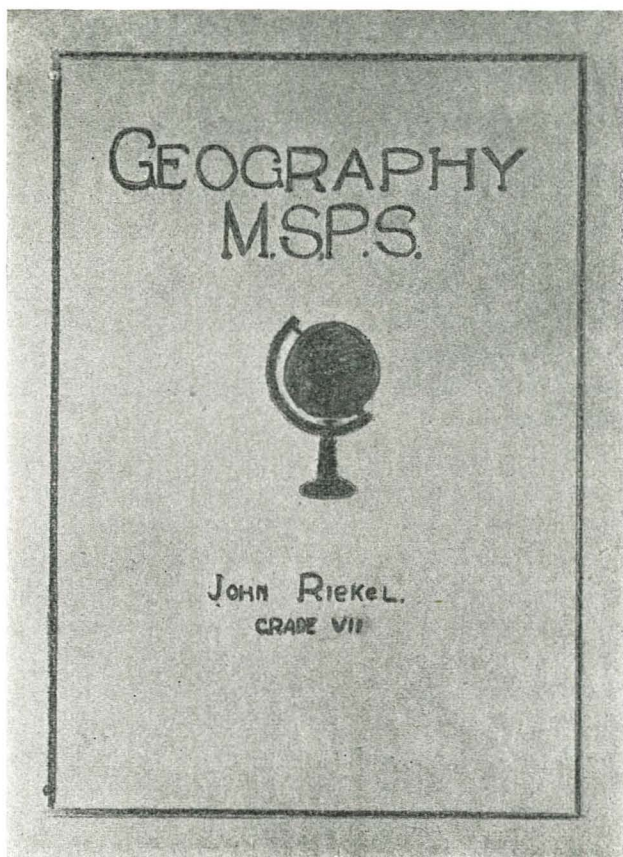
With a six-hour day, one can afford eight to fifteen hours of shopwork weekly and get in plenty of time for the foregoing with little or no home study.

For each subject, instead of building up a logical order of procedure, it seems to me perfectly feasible (except possibly in the case of choral practice but including shopwork) to arrange a list of topics any of which might be profitably taken up during the year. This list should include all essentials but should have broad relation as interests are developed during the year, by shopwork, by trips, by visitors or by current events; related topics, in the various studies, should be taken up and developed as far as the interest warrants and no farther. If, toward the close of the year, it is found that some of the essentials have not been touched upon, the increased power of the pupils and their broadening interests will allow such topics to be presented in unrelated fashion, but, in most cases, the capable teacher will find ways of relating all essentials either directly or indirectly.

The methods of all lessons should be active, frequent and purposeful participation, and I think I can best show what I mean by the following specific examples:

English.

Spelling Lists of Shop Words.
Orders for Shop Supplies.
Essays on School or Life Experiences.
Booklets, including such items as:
Cover Drawing; What I am doing in the Shop; Painting a Room; How Turpentine is Made; Application for Job; Addressed Envelope; Boston Charter.
Government Reports; lumber, etc.
Commercial Circulars and Catalogs.
Commercial Hand Books, i. e.: "How a Disston Hand Saw is Made," Henry Disston & Sons, Philadelphia; "Where Bicycle Tires Come From," United States Tire Co., New York City, N. Y.; "New England Industries," American Trust Company, Boston, Mass.; "The Treatment of Walls and Ceilings," Acme White Lead and Color Works, Detroit; "File Philosophy," Nicholson File Co., Providence, Rhode Island; "A Primer of Boots and Shoes," prepared in the form of a colonial alphabet book, Daniel S. Knowlton, 205 Lincoln St., Boston; "The Measuring Book," J. T. Slocumb Co., Providence, R. I.; "How to Run a Lathe," South Bend Lathe Works, South Bend, Ind.; Advertising periodicals (gratis): "Graphite," Joseph Dixon Crucible Co., Jersey City, N. J.; "The Disston Crucible," Henry Disston & Sons, Philadelphia, Pa.; Monographs prepared by shop instructors, i. e., Metals, etc.



Cover drawn by Seventh Grade Boy for binding Industrial Maps made by himself.

Local School Periodicals.

Technical and general magazines: Popular Mechanics; Popular Science Monthly; The World's Work; The Outlook; The Literary Digest.

Local Daily Papers. Correspondence with departments of local paper.

Good Books. Lives of men like: James Watt; Luther Burbank; Robert Perry; Abraham Lincoln; Cyrus McCormick; Robert Fulton; Marconi.

See Bulletin 35 U. S. Bureau of Education (1913) for selected list.

Pupils should:

Read aloud intelligently.

Reproduce after a simple reading the substance of a story or news item.

Express clearly ideas they have made their own.

Avoid gross errors in grammar.

Power will be gained by the pupil telling, in connection with a shop job, Why it was necessary; How it was done; and How it was tested, and by making such statements in the first person, in the second person, and impersonally.

LYCEUM HALL PREVOCAATIONAL CENTER.

Feb. 24, 1916.

Robert McCormick.

Wood.	Thick- ness.	Value of Stock.		Price.	Value.
		No. of Pieces.	Dimen- sions.		
Whitewood....	$\frac{3}{8}$ "	4	$11\frac{1}{2}$ "x $64\frac{1}{2}$ "	\$ 70. M	\$ 1.43
Whitewood....	$\frac{1}{4}$ "	5	$11\frac{1}{2}$ "x $60\frac{3}{8}$ "	50. M	1.15
Whitewood....	$\frac{3}{16}$ "	6	$13\frac{1}{2}$ "x $84\frac{1}{2}$ "	50. M	2.38
Whitewood....	$\frac{7}{8}$ "	3	$11\frac{1}{2}$ "x $44\frac{1}{2}$ "	90. M	.96
Chestnut.....	$\frac{7}{8}$ "	4	$10\frac{1}{2}$ "x $10'$	100. M	3.33
Chestnut.....	$\frac{2}{2}$ "	7	$10\frac{1}{2}$ "x $10'$	80. M	4.67
Redwood.....	$\frac{1}{4}$ "	2	$10\frac{3}{4}$ "x $62"$	40. M	.37
Mahogany.....	$\frac{1}{2}$ "	3	$10\frac{1}{2}$ "x $81\frac{1}{2}$ "	150. M	2.67
White Pine....	$\frac{2}{2}$ "	290	$9\frac{3}{4}$ "x $10'$	80. M	15.71
Maple.....	$\frac{7}{8}$ "	6	$10\frac{1}{2}$ "x $54"$	60. M	1.35

Written work should include:
Friendly letters.

Business letters: Seeking job, Orders, Acknowledgments, Requesting recommendations.

Telegrams—Postal blanks, checks and stubs.

In spelling, restrict the field mainly to the pupil's vocabulary. Teach often, and test only occasionally. Concentrate on a few words, say four new and four in review to a lesson. Teach meaning, pronunciation and spelling in this order. Anticipate and prevent errors if possible.

Arithmetic.

Examples drawn from the specific trade.

Bills.

Bills of material.

Examples drawn from a workman's life.

The importance should be urged of rough approximations before solving problems and of accurate checking after solving.

Hygiene.

Commercial Hand Books: "Protection Against Injury," International Harvester Company; "The Health of the Worker," Metropolitan Life Insurance Co.

Bulletins of the National Safety Council, Chicago, Ill.

Drawing.

Reading of Drawings.

Lettering.

Representation.

Working Drawings.

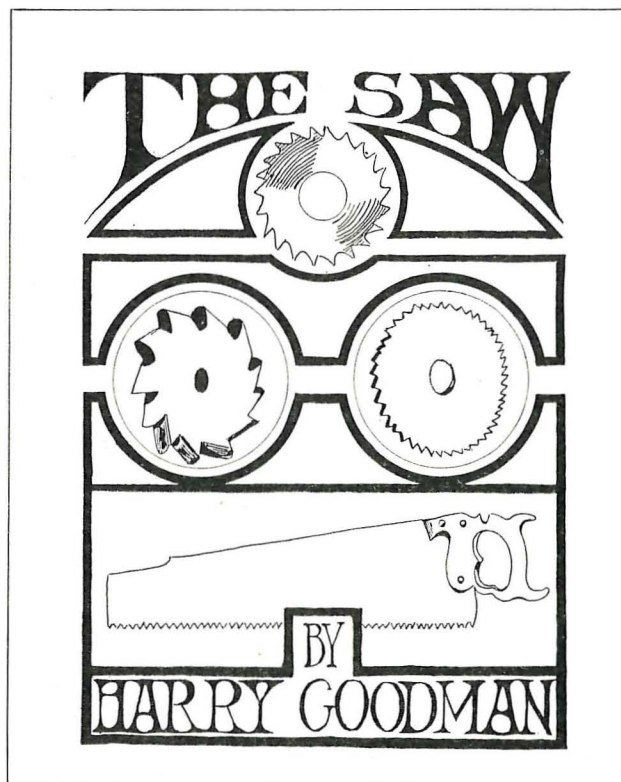
Design.

History.

(Emphasize that of the locality.)

For inspiration: Illustrated scrapbooks of Historical Events, Biographies, Current Events.

Reading from textbooks, reference books, encyclopedias, library books, such as: "Four American Inventors"—Perry; "Men Who Have Risen"—Mabie; "Stories of Great Americans"—Eggleston; "Men of Achievement"—Stoddard; "American Heroes and Heroines"—Bouve; "Boys of '76 and '61"—Coffin; "Winning His Way"—Coffin; "Twelve Naval



Cover drawn by Boy in Boston Prevocational Class for Composition on the History of the Saw.

Captains"—Sewell; "With Men Who Do Things"—Bond; "Captains of Industry"—Parton; "Our Country's Story"—Southworth; "American Leaders and Heroes"—Gordy; "American Hero Stories"—Tappan; "Land of Pluck"—Dodge; "Indian Stories of United States"—Allen; "Hero Tales"—Roosevelt and Lodge; "Heroes of Everyday Life"—Coe.

Debates.

Dramatics.

Illustrated Talks: Post cards, Stereoscope pictures, Lantern slides, Moving pictures.

Talks on Industries, Fundamental and Local: Origin, Development, Peculiar Problems, Division and Subdivision.

Topics for Talks: Agriculture, iron industry, textile industry, shipbuilding.

In connection with a fact, emphasize: (a) Why did it happen? (b) Where did it happen? (c) *About* when did it happen?

In connection with a person, emphasize: (a) Who was he? (b) What did he do for his country or the world? (c) *About* when did he do it?

Discuss: Slave labor, patents, labor saving devices, steam engines, steam boat, cotton gin, explorations, settlement of West, trade with East, transportation, Indian trails, rivers, roads, canals, steamboat, railroad, flying-machine, origin of parties, elections, city charter.

Geography.

Clippings from current papers and periodicals.

LYCEUM HALL PREVOCATIONAL CENTER.

April 18, 1916.

Robert McCormick.

Value of Education.

WHAT is the money value of an education? The average reduced to individual cases would be something like this: Two boys, age 14, are both in mechanics. One goes into the shops, the other into a technical school. The one in the shops starts at \$4.00 a week, and by the time he is 18 years old he is getting \$7.00. At that age the other boy is leaving school and starting to work at \$10.00 a week. At 20 the shop-trained fellow is getting \$9.50, and the technical graduate, \$15.00; at 22 the former's weekly wage is \$11.50, and the latter's \$20.00. By the time they are both 25, the shop worker finds \$12.75 in his pay envelope, while the technical trained man draws a salary of \$31.00. These figures are on a study of two thousand actual workers.

Railway and steamboat time tables and maps.

Field Trips—teacher first covering the ground.

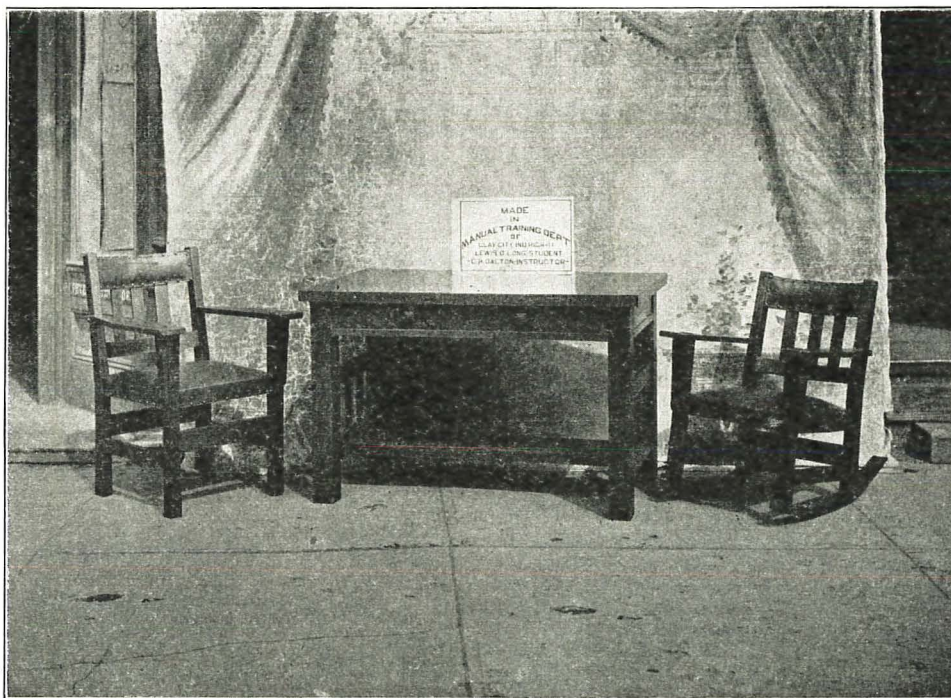
National Geographic Magazine.

Comparison between physiographic and occupational divisions.

Influence of environment (climate, rainfall, winds, currents).

Growth of leading cities.

Reference to such books as: "Industrial and Commercial Geography"—Smith; "Handbook of Commercial Geography"—Chisholm; "World's Commercial Products"—Freeman & Chandler; Statesman's Year Book.



STUDENT'S WORK, CLAY CITY, IND., HIGH SCHOOL.

The above cut represents one term's work of a student in the Manual Training Department of the Clay City, Ind., Schools. The suite was made of quarter-sawn oak fumed and waxed.

The term in the Clay City Schools is of eight months' duration with a manual training period of one hour and twenty minutes per week. The first nine weeks of the term are devoted to mechanical drawing and the making of detailed drawings. The remaining 23 weeks are devoted to woodwork. The shop is not equipped with machinery and all work is done by hand.

The suite was designed by Lewis O. Long. Mr. Charles H. Dalton is shop instructor.

THE SCHOOL PAPER

Frank K. Phillips, Supervisor of Printing, New Jersey State Summer School,
Ocean City, N. J.



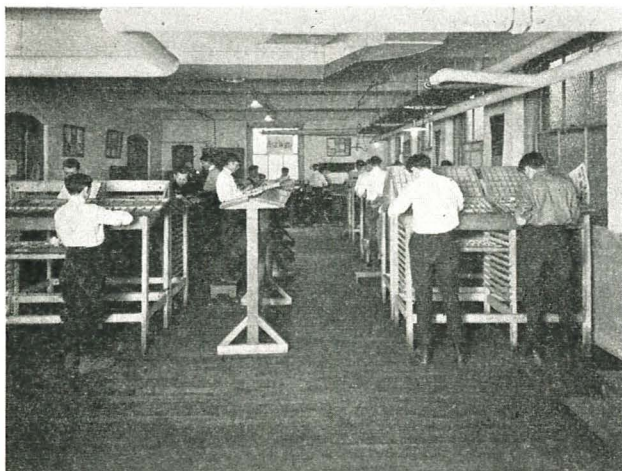
ASIDE from its educational and vocational values, one of the advantages of a printing outfit in an educational institution is that it provides facilities for the printing of a school paper. Truly the school paper that is actually printed in the school printing department is a perfect co-ordination of "Brains, Heart, and Hands."

The school paper, when properly planned, edited and printed, will create school patriotism and an increased interest in all the activities of the school, educational, athletic and social. It can be made the bulletin of all news regarding the school and can be used as a means of interesting parents by acquainting them with the aims and purposes of furnishing instruction that appeals to both the motor and sensory faculties. The school paper will acquaint parents with the progress being made by the pupils, and it will afford the principal of a school the opportunity to talk logically and convincingly to the parents of the pupils under his charge. The school paper should be to the school what the newspaper is to the community; a purveyor of news, a public forum for the discussion of relevant matters, and a mold of public opinions.

Art, English, composition, punctuation, spelling, mathematics and mechanical skill are a necessary combination to produce a school paper of value. Such a paper, by creating the demand, will have a tendency to promote logical thought and careful assertion on the part of the pupils; will stimulate originality in ideas, execution and art, and will unite into a compact, progressive force all the individual departments of a school.

Equipment.

In school printing outfits aggregating \$500 or more in cost, provision is usually made for printing



Print Shop, Boys' Vocational School, Newark, N. J.

a school paper. Such equipment includes a proper amount of body and display type, brass rules, initial letters, and an ample supply of quads and spaces, leads, slugs, and furniture.

It is, of course, impossible to design and arrange a school paper format that will appeal to the tastes of all educators, but the following suggestions regarding necessary material, arrangement and sizes of type may prove of assistance to those who have already started a school paper or who contemplate doing so in the future.

The type selected should be perfectly plain and legible, of normal width of letters, medium in tone, and free from any eccentricities that characterize certain types designed for special purposes.

On account of the necessary stressing of legibility in all school printing, the size of the body type selected is most important. It is the opinion of the writer that in all school papers the size of body type should be selected according to the ages of pupils; i. e., the younger the pupils the larger the type. In order to fix a definite standard the following sizes are recommended: for pupils in the fifth, sixth and seventh grades, fourteen point type; eighth and high school grades, twelve point type. In colleges, universities, trade and continuation schools the size of type is usually selected with adult discrimination.

Relative sizes of body type from 6 to 14 point inclusive are here shown for comparison purposes.

6 Point

THIS TYPE IS CENTURY OLDSTYLE and this line is set in the six point

8 Point

EIGHT POINT IS MUCH USED for newspapers and magazines

10 Point

BUT IN SCHOOL WORK this size is better for text

12 Point

THE LARGER SIZES are best for the scholar

14 Point

FOR YOUNG EYES use this size type

Display type, used for headings or advertisements, need not necessarily be extremely heavy in tone. Type of the same face as that used for body type, but ranging in sizes from six point to 36 point will suffice for ordinary display purposes. When more contrast is desired than type of the same face and varying sizes afford, a heavier face or an italic type of the same "family" should be selected.

Paper Selection and Type Arrangement.

In arranging the page size and number of pages of the proposed paper care should be taken not to make them too pretentious. A paper too large for the capabilities of either pupils or outfit means sacri-

ficing instruction to production. A school paper whose page dimensions are in proportion as $5\frac{1}{2}$ is to 8 will lend itself to harmonious arrangement of type matter.

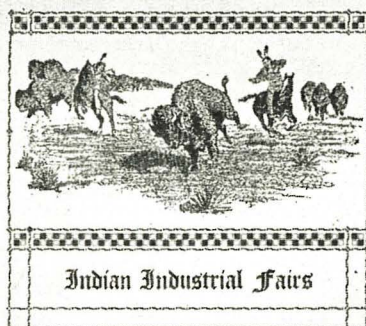
Such a size (or smaller) will facilitate presswork. The average press used in school print shops will readily take a form 8x13 inches. If the book is to be 5x8 inches it will be possible, on the above size of press, to print two pages at a time, as the two pages will occupy a space approximately 8x12 inches.

The first number of the school paper should not contain over twenty pages, and a considerable

ordinary school paper. The stock for the cover should be of subdued coloring, yet light enough to permit of good contrast between it and the wording thereon.

Name of Paper.

The name of the paper is an important thing. Select a short name, suggestive of the kind of school, location of school, or the purpose of instruction. The brevity of the word will allow of better display on front cover and is not so apt to become tiresome in repetition. Some of the names of the most successful and most popular school papers are The Artisan, The Craftsman, The Worker, Progress, The



Press Comments

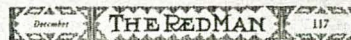
INDIAN FAIRS



HOSE who decline to believe in any other kind of Indian than that certified and informed by Fenimore Cooper may be interested to learn of the progress that modern Indians are making in the field of agriculture. What they have accomplished in this direction is becoming more generally known through the inauguration of Indian fairs, sanctioned by the Indian Office at Washington and fostered and promoted by it.

The purpose of these fairs is to encourage the Indians in farming, the production of live stock, and other industrial activities by stimulating rivalry and competition among them.

The fairs, which take the place of the well and unfavorably known Indian "bets," are in charge of the superintendents on the several Indian reservations. They are patterned after the white man's county fairs, with the undesirable features eliminated. Gambling, liquor, and



dancing are prohibited; horse races, if any are held, are limited to two a day. The exhibits for the most part consist of farm products of all kinds, live stock, Indian handicrafts, culinary products, weaving, the work of Indian children in the schools, baby shows, and similar exhibits. For the best exhibits generous prizes are offered of cash and useful things. In addition, a greatly prized certificate of merit is sent to the winners by the Indian Office at Washington.

Experts from the various State agricultural colleges take occasion at these times to give lectures, in some cases illustrated by slides or moving pictures. Most of the fairs are financed locally by means of gate receipts, voluntary subscriptions, and advertising in programs; in a few cases, however, the Indian Office has given aid from funds at its disposal. The first Indian fair was held on the Crow Reservation in Montana in the fall of 1905, while this year nearly one hundred fairs were held.

On most of the reservations holding fairs there is a regular organized "Indian Fair Association," with Indian officers, who manage it under the supervision of the superintendent of the reservation, thus making the Indians feel that the fair is their own enterprise, for the success of which they alone are responsible. The superintendent of one of the large reservations in Arizona, reporting to the Commissioner of Indian Affairs in Washington concerning a fair under his direction, says:

The event passed off without a single incident of disorder or disturbance of any sort. There was not a single instance of drunkenness, and no evidence was to be seen of drinking on the part of a single Indian. No extra police were employed, but two special liquor officers were on the ground incognito, yet failed to make a single arrest. This showing speaks volumes in favor of the Indians. Could a white assemblage of similar size or duration make as good a showing?

Another reservation superintendent, reporting to the Commissioner regarding the benefit of these fairs and their results, says:

There can be no question as to the benefit to be derived by the Indians from these fairs. They arouse ambition, and thereby stimulate effort and invite competition. The expression—extinguished not vouched for—"E-ted-o-pa-ba-goo-as" (I'll beat him next year), heard on every hand, clearly denotes the spirit of rivalry engendered. At the outset the Indians were in the dark as to the meaning and purpose of the fair, but they are now wide awake.

The Indian Office keeps in close touch with the work and progress of these exhibits, and issues certain orders to the superintendents that have

The product of the print shop of the United States Indian School, Carlisle, Pa., is nationally famous. Above is shown views of two pages of "The Redman," the school paper. As an example of good typography and skilled presswork it has few peers.

reduction in this number of pages is advisable when printing instruction is being furnished to pupils below the eighth grade, or when the aggregate periods of instruction per day do not amount to at least three hours.

Where ornamentation is desired the original drawings for the ornaments may be the product of the drawing classes, mechanical or free-hand. As simplicity, however, is the keynote of art, care should be taken to prevent over-ornamentation.

Type pages, if set in one column, will be easier read, and afford greater convenience in even spacing of words. (See illustration, The Worker.)

The paper used should be a plain, white stock, of good quality, but not necessarily with a coated finish. The kind commonly known as machine-finished book paper is usually appropriate for an

Torch, School News, Acropolis, The Tech, The Workmaster, and School Activities.

Organization.

Like ordinary newspaper organizations the school paper organization should be divided into three departments: editorial, commercial, and mechanical.

The editorial department usually consists of the editor-in-chief, associate editors, and reporters. These officials should be chosen on account of their special fitness for the work. The editor-in-chief should be the student most proficient in the correct use of English. In addition to this proficiency he should possess a discriminating sense for actual news and articles of real literary value. An associate editor from each department and a reporter from each class, will complete a well-balanced editorial department.

The commercial department should have charge of the circulation and advertising. As this phase of the work is most important such officials should be selected from the commercial classes. The work affords an excellent business training and possesses rare vocational advantages. As the school spirit should be utilized in securing subscriptions to the school paper, it is essential that the students in charge of this work be selected from those most steadfast to the aims and ideals of the school.

No advertisements should be solicited if the school paper has not a distinct advertising value.

before date of publication. This will usually allow ample time to have cuts made.

The actual printing of a school paper requires great skill on the part of compositors and pressmen. The printing should never be slighted. Prepare a "dummy" before giving out the copy. This "dummy" should show the number of pages, type arrangement, page layouts, size of type page, and descriptions of margins, running heads and titles. Having once established the "style" of your publication it is wise not to make any change in same unless convinced that the proposed change is a decided improvement.



REPRESENTATIVE SCHOOL PAPERS.

Upper Row (left to right)—*The School Print Shop*, issued in the East Technical High School, Cleveland; *The Torch*, printed in the Prevocational School, Richmond Va.; *The Workmaster*, printed and published in the Austin School, East Boston; *The Worker* of the Boys' Vocational School, Newark, N. J.

Lower Row (left to right)—*Vocational Progress*, printed in the Bayonne, N. J., Vocational School; *The Artisan*, published by the State Trade Education Shop, Bridgeport, Conn.; *Printing School Bulletin*, issued by the pupils of the School of Printing, West Side Y. M. C. A., New York City.

Co-operation with the local advertising club or Chamber of Commerce in the city or town where school is located, will place the school paper on the approved list of advertising mediums, provided such paper has advertising value.

The mechanical and art features of the school paper should be under the direct supervision of the printing and drawing teachers. All drawings intended for reproduction should be submitted to and approved by the printing teacher at least one week

The subscriber to any journal, educational or otherwise, usually resents a constant change in page formations or article placements.

Several hundreds of school papers now being printed in the schools they represent, attest the educational and economic values of school printing outfits. The work besides being interesting affords pupils an opportunity to create a product of commercial value under the exact rules and conditions that prevail in the commercial field.

The Francis T. Nicholls Industrial School for Girls

Rita Johnson, Principal, New Orleans, La.



BEFORE September 24, 1913, there was no institution in New Orleans in which a girl could get special training for trade work. Unless she was able to attend college, or preferred to take up some kind of clerical work, she could not get any special instruction for any occupation until after graduation from the high school.

The Nicholls School was established to meet this need. Its purpose is to give to the girl who desires training in home-making, and to the girl who desires to go into the workshop, an equal chance with the one who wishes to go to college or to do commercial work.

The organization, general management and methods of instruction are wholly unlike those in other public schools of the city, because the training is for a variety of occupations, unlike in virtue, some necessitating more skill than others.

Admission Requirement.

The school realizes that many girls are compelled by circumstances to take vocational training at the age of 14 years altho they have not completed the work of the grammar grades. Therefore, a girl 14 years of age who has completed the work of the sixth A grade in the elementary schools is eligible for admission to the school. Graduates of any recognized institution may likewise be admitted.

All applicants for admission to the Industrial School 17 years or over, and who have not completed the sixth A grade in any school, may be admitted upon presenting a permit signed by the superintendent of schools.

At this early period, the Industrial School is realizing the need of some provision for the exclusion of those students who prove unfit, after a trial of a definite time.

It is thought by some that the Industrial School is the only place for unintelligent girls, or all girls who have not been successful in the elementary and high schools. It is true that success in the trade requires a different kind of ability, but is it true that dull girls have as great a chance for success as the bright and intelligent ones? Technical skill requires intelligence of the highest type.

The enrollment for the year was as follows:

Dressmaking	277
Millinery	78
Domestic Science	36
Commercial Design.....	7
Salesmanship	25

Total enrollment for year423

Of this number 33.09 per cent have "dropped out." Those who have left have been "followed up" and much valuable information has been obtained by comparing the reports of the Industrial School principal and the social worker on the reasons for these withdrawals. Of this number 19.85 per cent have permanently withdrawn from the school; 2.83 per cent have withdrawn to go to work, and 17.02 per cent for other reasons.

As there is only one school of the kind in New Orleans, there is no limited school district, but girls are admitted from all sections of the city. This proves to be a hardship on those who live in parts distant from the school, because of the time taken in going to and from school and because of the daily carfare. This is one of the reasons why many who come cannot afford to remain longer. Many families need the small salary that the girl will immediately earn in some unskilled labor, so she is withdrawn from the school.

Many of those who withdrew had left the elementary school and the high school because they did not like to "study books," and they thought that the Industrial School suited them better. After a short time some were induced to return and complete their "grade work" or high school course. Several left because of personal illness in the family, and a few were indifferent. A few applied as "part-time students" to specialize in particular branches of dressmaking, but the teaching staff was not sufficiently large to accommodate these few, and the number applying not sufficiently large to warrant asking for a special teacher. These pupils withdrew. For these and various other reasons over which the school has no control the "total enrollment" will always be far in excess of the "average number belonging."

The present students of the Nicholls School range in age from 14 years to 50 years; while in grade they range from seventh grade thru the senior class in the high school. A few of the part-time students of the school are also students of the Sophie B. Wright High School.

Girls who are but 14 years of age and have left the elementary school not because of economic necessity will be induced to remain at the Industrial School for two years, in order to acquire greater efficiency in their work. Graduates of the elementary schools and high school students and graduates show greater earnestness and better results in ability, application and progress.

Students are admitted on Monday of each week,

and they may select the trade they wish to learn. If, after a fair trial, it is realized by the girl herself as well as the teacher that she has selected the wrong trade and that she would do better at some other work in the school, she is permitted, after consultation with the principal and parents, to make the change.

Ten months was to be the school session, but the needs, as they presented themselves, required the extension of the regular school session thru July 31, making it 10.55 months in length. The same rules and regulations for the other public schools of the city govern the holidays and short vacations. The school day extends from 9:00 a. m. to 3:00 p. m., every day except Sundays. An hour each day is given for luncheon and recreation.

Habits of punctuality are encouraged and the importance of regular attendance is stressed. All tardy students are required to register the time of their arrival at school in the office of the principal. It is hoped that parents will soon realize that certain excuses for tardiness and absence cannot be accepted in an Industrial School for the same reason that they are not accepted in the shops and factories.

No student is held back for the general benefit of the class, but special attention is given the individual, who will be promoted as soon as she shows the ability to do the advanced work. Each classroom is a shop and is run as nearly like a regular workshop as is possible. The majority of students of this school cannot afford more than one year for training; therefore, the course of study is extended over one year with provision for advanced courses for those students who may remain longer. Girls with the advanced training can secure better positions. No girl will be recommended for a position until she has been given credit for a definite number of hours of instruction. Besides she must have attained certain trade standards.

The following courses are offered:

Dressmaking.
 Millinery.
 Art needle work.
 Electric power machine operating. Clothing and machine operating.
 Novelty work.
 Laundering.
 Salesmanship.
 Subjects taught in connection with trades.
 Number of periods required of students upon previous preparation of the students.

1. Business Arithmetic. Directly correlated with the trade work. Problems in measurements of practical use in the departments of trade and keeping of accounts, proportion of girl's salary due mother and how this should compare with expense of dress, amusements, etc.

Textbook: Industrial Arithmetic for Vocational Schools—Gardner and Murtland.

Francis T. Nicholls Industrial School For Girls.

Laurel and Antonine Streets
 Telephone Uptown 3797

To.....
 Address.....

This will introduce to you

Name.....
 Address.....

who wishes to be employed in your establishment. Any consideration that you may show her will be appreciated by

Yours truly,

Principal.

Francis T. Nicholls Industrial School For Girls.

Laurel and Antonine Streets
 Telephone Uptown 3797

New Orleans, La.....

My Dear.....
 Kindly fill out the enclosed card and mail it back tonight.

Yours truly,

Principal.

To Parent or Guardian of Student seeking Placement.

Your { Son
 Daughter has asked the school to place her. Before
 Ward

doing so, I desire your advice and sanction. As this placement of your child or your ward is of the greatest importance, you are requested to come in person, if possible, to

School.....
 Address.....

Principal.

1. Cards Used in Finding Employment.

2. English. (a) The correlation is the same as in the course in arithmetic. Writing of bills, receipts, requests for samples, orders, complaints, description of garments made, etc. Special attention given to spelling.

(b) English of appreciation. Training that will raise each student's reading standard.

Textbook: Modern Business English—Smith & Mayne.

3. Art and Design. Aims to give the student greater efficiency in technique. Designs include the drawing of patterns to be applied to work in the respective trades.

Dressmaking. Costume design. Original and copying from imported models. Designs of dresses, wraps, etc., to be developed in the dressmaking department. Color theory.

Millinery. Designs for shapes and copying imported models. Color theory.

Models to be developed in the Millinery Department.

4. Domestic Science. The development of personality in the home. Designs for rugs, curtains. Color schemes for rooms. Study of textiles. Table decoration, arrangement of flowers. Color theory. Domestic science.

General Household Management.

For this course the model home is provided. Here the advanced classes demonstrate their work

Francis T. Nicholls Industrial School For Girls

Laurel and Antonine Streets
Telephone Uptown 3797

Dear Sir:

We are "following up" former students of the Nicholls School.

We ask you to help us to do this even at the expense of a little of your time, because by getting information about these employees directly from you, we can make them more efficient workers. Therefore, will you kindly fill out the enclosed blank?

Soliciting your co-operation by asking you to tell us of future opportunities in your establishment, we remain,

Very truly yours,

Principal.

Francis T. Nicholls Industrial School For Girls.

Laurel and Antonine Streets
Telephone Uptown 3797

INQUIRY BLANK

Is.....working for you at present?.....
What is the grade of work of this employee? Excellent.....
Good.....Fair.....
How could it be improved?.....

Will you kindly let us know what is interfering with her efficiency?.....

Has she ability for advancement and increase in wages?.....

Have you any vacancies at present?.....

Signature.....

Name of firm.....

Address.....

Francis T. Nicholls Industrial School For Girls

Laurel and Antonine Streets
Telephone Uptown 3797

New Orleans, La.....191

I am interested to know how you are progressing with your work and would like to see you (and one of your parents or your guardian, if he or she can come.)

on.....
at.....

Please bring this card with you.

Principal.

3. Cards Used in Follow-up of Girls' Trade Record.**The Placement of Students.**

From the time of its organization, the Nicholls School has made provision for the placement of its graduates in the trades for which they were trained, effort being made to place in the shops even second-year students for practice work during a part of their last school term.

However, the school cannot guarantee to secure positions for all of its students. This is impossible since, as a public school, it must admit any girl whether she proves successful or not. It does endeavor to place every girl who has completed the course.

From an educational viewpoint, the work of the placement of students is of very grave importance. Its effect on the work of the school will be as follows:

1. It will give to each student a definite purpose and an impetus to reach the object for which she must diligently strive. It will free her mind from the dead weight of traditional thought that would stop progress and cause her to lose sight of the fact that there is a true dignity in labor, and it will demon-

strate to her that in the eternal march of civilization each individual may become a master builder in the divine plan of our Infinite Creator.

2. It will keep the school in touch with the demands and needs in the various trades, with wages paid, and with opportunities for advancement.

3. It will be one of the "yard sticks" for measuring the school's efficiency.

4. It will be the means of securing wholesome criticism of the methods used in the school.

This problem of placement is a tremendous one.

The result of this year's work proved the necessity of the following lines of activity:

(a). The interviewing of girls who apply for work, and of employers when they apply for workers. In this way much valuable information has been gleaned from the experiences expressed by the girls who have already been placed. The employers must also be interviewed so that they may become familiar with the school and may be induced to visit it.

(b). It must be the duty of the school to visit every establishment before placing a girl, unless it is already well known to the school, then the visit may follow instead of precede the placement.

Cards No. 1 and 2 and sheets numbered 1 have been used. Responsibility does not end with the securing of a position. A "follow-up" campaign must now be instituted. In order to secure good results it was found necessary to issue the cards numbered 3. One seeks information relative to the quality of the employer's work, and if not satisfactory, why not, and how could it be improved; the other asks a report from the girl herself on her work, wages, and shop conditions. In this way, the school has kept in complete touch with the students who have been placed.

On account of the number of other immediate and pressing demands, neither the principal nor the secretary could in all cases act with the promptness that would have been the result of establishing the worker in a good place or in some instances, rescuing her from a poor one. As a rule, employers are generally prompt and courteous in returning the reports, but the answers to these are sometimes vague, and it has happened sometimes that nothing has been heard from the girl.

Personal visits to both the employer and the home of the girl are now a necessity. This is indeed a tremendous one, for many of these homes are far remote from the school, quite a number being in the outlying districts. The question of judging relative values is one that harasses the mind of the principal as to which should claim her first and immediate attention; the most pressing of the daily duties within the school or those affecting the welfare of the graduates.

Young girls without proper guidance are inclined to place the question of salary above that of op-



FIG. 1. EXAMPLES OF REFINED AND ARTISTIC HAND-BUILT POTTERY. NORMAL DEPARTMENT, ART INSTITUTE OF CHICAGO.

CLAY BUILDING

W. C. Whitford, Assistant Professor of Industrial and Esthetic Education,
University of Chicago

First Article

CONTOUR ENRICHMENT.



IN teaching any form of art the thing sought is the power to recognize and to create Quality."—Dow.

The educational adaptation of pottery begins with coil-building. This work can be started in the fifth and sixth grades and carried on, in progressive stages of complexity, thruout the entire course. The method is easily mastered by the beginner and is often resorted to by the expert potter for special shapes and purposes.

In connection with the building a study of indigenous pottery of both North and South America should be taken up in order to create an interest and for the large quantity of good shapes and ideas to be obtained in this way. The works of Holmes and Mason, of the United States Bureau of Ethnology and the Smithsonian Institute, contain a wealth of material not only for pottery, but for use in history and English.

Pottery courses should not be introduced into the curriculum merely to add a bit of play or hand-work, except perhaps below the sixth grade. In the smaller schools where one teacher has to handle all the art work, pottery can be introduced in connec-

tion with a design course and used to carry out certain features into a finished practical product. For instance, a course in design completing a study of curves, could make one piece of pottery to illustrate this lesson; a piece of underglaze painting to illustrate direct brush work; a tile or plaque to illustrate decorative composition, etc. In the larger schools, where an instructor in pottery is possible, the pottery course should be given a background, or educational aspect, by introducing a study of the historical evolution of pottery from primitive to modern times. A term paper should be required, a scrapbook of cuts and examples made and the work in general coordinated with that of the design room.

The method of coil-building is familiar to the average public school instructor and needs no extensive discussion.*

The clay should be carefully prepared each day so that it is always of the same consistency or plasticity. It should be in condition so that it will readily roll out into strips or ropes about the size of the index finger, and can be bent and shaped without cracking on the one extreme, or being so soft as to stick to the fingers on the other.

*See Perry and Scully. *Industrial-Arts Magazine*, January, 1917.

The method of construction is identical with that of the Primitive American women of past centuries, and the same as used by the Pueblo Indians of New Mexico today.

The coils are fitted together for the bottom, carefully welded and smoothed, then the side wall is started, smoothed, shaped and finished as much as possible as the work progresses.

Small cracks often appear in the bottom of the piece during drying if the clay isn't just right, or, if the coils have been carelessly joined. This difficulty can sometimes be avoided by making the bottom from a solid slab of clay like a tile, using the compass to get the circle, and starting the side coils as formerly.

A lack of patience and care in building will be paid for in the firing. The kiln is no respecter of persons and plays all kinds of tricks on the ware under the best of conditions.

The most important thing aside from the process is in the design or shape, i. e., the proportion and curves of the piece.

This is where the work of the design class should co-operate with that of the pottery class. Curves should be studied and analyzed from ancient and modern pottery and from nature. Direct application of this study should then be undertaken in pottery.

Greek art offers a rich field for the student of curves and proportion. A chart of curves made from a few Greek vases practically exhausts the possibilities of curve adaptation. From such a chart many exercises and lessons in pottery design should be given until the student begins to show a true "curve sense." From this point the actual production of refined and artistic pottery will rapidly pro-

gress and there will be noted a freedom in the work from the typical stiff, wooden appearance characteristic of the average beginner.

In the coil-building process the chief educational phase to be developed seems to be in the co-ordinating activities of mind, hand and eye—the training of the eye to see defects and the hand to remedy them.

The piece during successive stages of its construction should be placed upon a whirler and the student trained to make the necessary comparisons of contour, starting with the side of the piece which seems most perfect, correcting the opposite contour with this as a guide to the eye, and gradually turning the piece, noting variations and making careful corrections until the piece is perfectly true.

This process of finishing and refining gives fine training in the sense of symmetry, balance and proportion, and most valuable of all, it endows a student with the faculty to criticise, judge and correct his own work. This is one of the essentials to an artist's success, and is one of the so-called secrets of artistic achievement. A craftsman who falls in love with his work before it is completed, and fails to see where it can be corrected and improved, cannot hope to go far in his field.

Cardboard profiles can be cut and used for help in truing both the outside and the inside contours, but the more such means are used the less will be the training of the eye to see defects. The compass and triangle method, shown in Fig. 3, is the most satisfactory.

Adjustment of angles A and B, by making necessary corrections in contour, as the piece is turned, is the only way the difference in 1 and 2 can be corrected. No piece should ever become as imperfect as that



FIG. 2. EXAMPLES OF CONTOUR ENRICHMENT. CERAMIC DEPARTMENT, IOWA STATE COLLEGE.

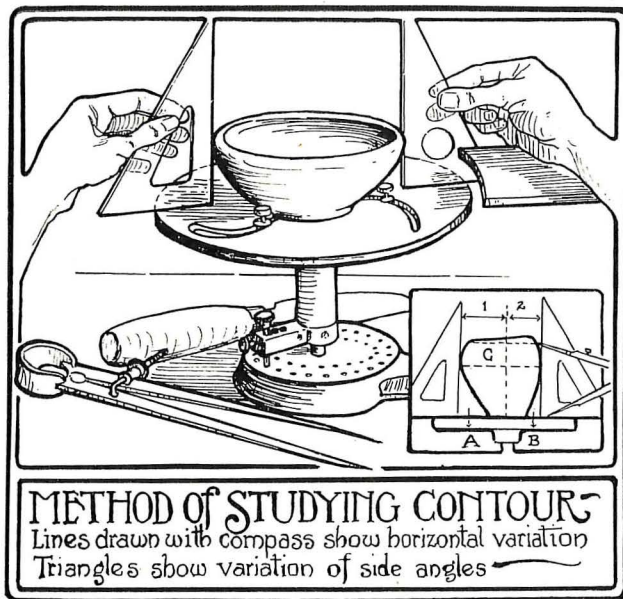


FIG. 3.

indicated in the sketch and this is not likely to happen if the work is placed on the whirler frequently.

After the piece is perfectly true the remaining important feature is the finishing of the base. The piece is placed bottom-side up, the bottom circle corrected with a compass and then the base is hollowed out slightly, leaving a concave surface. This enables the piece to stand more firmly than would be possible if the base were left perfectly flat, especially upon slightly rough surfaces. A symbol, monogram or other mark of ownership should always be added to the base for identification.

The first work in pottery should constitute only simple pieces, a small cylinder or bowl. When sufficient perfection of technic is reached the first attempt at decoration should be "modification of form" or a phase of modeling which in pottery should be understood to mean enrichment of form by addition

of handles, feet, spouts, lid or covers and simple modeled ornament which is in strict conformity to the lines of the piece. All modeling must be appropriate and seem to grow out of the form itself, and not appear as if stuck on as an after-thought.

Handles and feet, or other additions, should always be made and attached as soon as possible so that they will be of the same consistency as the body to which they are applied. If the piece becomes hard, such additions crack and pull away from the piece due to different contraction during drying and firing. Covers should be made at the same time as the piece upon which they are to fit, unless careful measurements are made, otherwise there will be a difference in size when dry due to different shrinkages.

With pottery of this type, very little, if any, surface ornament is needed. Its beauty should consist of simplicity and grace of curves and proportions and the glaze treatment.

Clay being a soft, plastic material should frankly proclaim this quality in every line. There should be no sharp, knife-blade lines, edges or corners. Furthermore, the glaze, which is a form of glass and becomes fluid in the kiln, will run away from sharp edges, leaving them bare and unsightly in the finished piece.

The pottery course becomes more definite, and has more of an educational aspect, if some sort of simple outline or scheme of procedure as suggested below is followed out with each problem.

CONSTRUCTIVE AND APPLIED DESIGN.

Problem I. The Making of a Clay Cylinder or Vase.

Exercise 1. Mental.

Development of idea (visualize).

Exercise 2. Graphic.

Translate mental image into design on paper.
 (Make visible the mental image.)



FIG. 4. CONTOUR AND SURFACE ENRICHMENT IN COIL-BUILT POTTERY.
 UNIVERSITY HIGH SCHOOL, CHICAGO, ILL.



FIG. 5. A PROBLEM IN COVERED JARS. UNIVERSITY HIGH SCHOOL, CHICAGO, ILL.

Exercise 3. Structural Application.

Translate design into actual material.

In order to successfully carry out a problem, the instructor must carefully demonstrate and explain the thing to be developed. Principles of design must be discussed, good specimens and examples, either in photograph or from the museum, should be shown. The use and environment of the finished piece should be pointed out and the problems of construction discussed.

If a record or log is kept of all pieces built additional interest will be stimulated. The student should be informed as to the technical requirements of production and should do all the work, including glazing and firing, when age and other conditions permit.

An outline similar to that indicated below can be developed, suitable to the ability of the student, and added to the design sheet.

CONSTRUCTIVE AND APPLIED DESIGN.

Problem II. The Making of a Clay Bowl.

Artistic Considerations. (Example of data.)

1. Design. (Type or source)—Greek.
2. Use or environment—Flower-bowl.
3. Method of construction—Coil-building.
4. Tools—Compass, boxwood modeling tool, steel scraper, etc.
5. Enrichment—Surface enrichment, horizontal border, conventional motive, color, orange-green-violet triad.

6. Process—Incised design, inlay mat glaze.

Technical Requirements.

1. Composition of clay—70% local brick clay, 30% local fire clay.

2. Biscuit fire—Cone 02, 2030°F, 1110°C, twelve hours.

3. Character of glaze—Outside glaze mat, lined with gloss glaze.

4. Glaze treatment—Inlay—Body glaze A3, border B1, C3, D7; blue lining No. 55.

5. Glaze fire—Oxidizing; Cone 05, 1922°F, 1050°C, ten hours.

We cannot expect hand-built pottery to have the accuracy and smoothness of a wheel-turned or cast piece. Its beauty does not consist of its smoothness, but in its development or embodiment of the artist's expression of personality. Its individuality is one of its chief charms and marks it as a craft product instead of a unit from a machine. However, this ideal should not be carried to the extreme of careless and crude methods.

The finished piece should be true, graceful and refined, suited to its use and not too heavy. It should frankly acknowledge its material. Hand-built pottery has a surface which is characteristic just as truly as does hammered brass. This surface should not be sandpapered away or turned down on a lathe. Shapes and designs for this work should be chosen which do not adapt themselves readily to mechanical processes.


The following are a few objects suited to this method, bulb and nut bowls, flower bowl and insert, twig stick or bud vase, fernery and insert, card and ash trays, inkwell, plant jars, book blocks, candlesticks, paper weight, letter holder, match boxes, various jars with covers, clock forms, pitchers and steins, lamp bases, hanging lanterns and wall lamps, tea tile, fireplace tile, etc.

THE cause thou fightest for, so far as it is true, no further, yet precisely so far, is very sure of victory. The falsehood alone of it will be conquered, will be abolished, as it ought to be: but the truth of it is part of Nature's own laws, co-operates with the world's eternal tendencies, and cannot be conquered.

—Thomas Carlyle.

THE SERVICE ARMY---FOOD ECONOMY AND THE ELEMENTARY SCHOOL

Ernest B. Kent, Director of Manual Training, Jersey City, N. J.

HE teachers in American schools face, as never before, the question of what the school can do for the country in this time of stress and need. The high school is giving its answer in unmistakable terms.

The elementary school is slower to respond, altho the teachers share the feeling that they must do something not only directly but thru the pupils, and that they must find a way to make even the youngest child feel his part in the common effort and feel that this effort counts in the result.

In all recent public appeals, from the President's proclamation and Roosevelt's cry of "arm and farm," to the editorials in the smallest newspapers, food service has been given a place next in importance to military service as the opportunity and duty of the country in the common cause. And here conservation of food has been placed with production. The latter is the more inspiring and has appealed to high school boys in enlisting for the farm and to grammar school boys in enlisting for the backyard garden.

The question has been well asked whether we cannot begin the war service of the younger children, where the productive agricultural service of the older boys and girls ends. Can we not arouse patriotic enthusiasm among the city children who cannot have a garden and among the children who are too young to make one for food conservation which is a matter of the individual home and which ought to reach every home? Can we not awaken even children in the third and fourth grades to the idea of getting their own consumption of food on a proper war basis and give them some work that they can do with a realization that they are serving their country?

The suggestions which follow are emergency answers to these questions and are obviously hasty and incomplete. Most of them are being tried out; some are still under consideration. Their main merit is that they can be applied quickly, at small expense, and with comparatively little risk. They are submitted with the hope that they may suggest other ways of doing the same or similar things and in the belief that a variety of such experiments this spring will be the best preparation for the much more serious efforts to which we must look forward during the year—or years—to come.

The problem of teaching food conservation is simplest, of course, in the case of pupils attending the classes in domestic science, which in Newark are the girls in the seventh and eighth grades. We have largely set aside the regular course during the two last months of the year, substituting a series of lessons on corn recipes, dishes of dried fish, dried

vegetables and fruits, meat substitutes, etc. The home application of each lesson is being stressed more than usual altho the Newark schools have long noted the pupil's record of homework in her notebook, with each effort countersigned by the mother.

As a means of further emphasizing the efforts of the domestic science teachers in the seventh and eighth grades, the regular class teachers have been advised to hold daily discussions, emphasizing the necessity of food economy and calling attention to the threatened shortage in the wheat crop. The follow-up has been outlined to the teachers for each of the five days of the school week.

On the day of the domestic science lesson, the teachers have been asked to obtain from the pupils a summary of the lesson. The teachers are asked to clear up various doubts and misunderstandings and to discuss the lesson so as to fix more firmly in the minds of the pupils the ideas and principles and to give them a perspective upon the problem. It has been suggested that the boys attend to the brief discussions and that if they have no sisters in these classes, take the main idea of the lesson home to their mothers. It has been recommended that the boys frequently copy recipes and take them home.

For the second day after the domestic science lesson, it has been suggested that teachers discuss generally the national and international situation with reference to the kind of food taught in the lesson. For example, in the case of corn bread, the difficulty of getting Europeans to eat corn.

For the third, fourth and fifth days the teachers have been asked to receive from the pupils, reports regarding the home application of the lesson. The teachers are especially requested to make every effort to have the girls repeat the work at home and to impress upon their minds the double value of the lesson to the pupils themselves and to their country.

As a means of securing direct contact with the mothers and housewives of the city, letters similar in content and purpose to the following have been issued over the signature of the city superintendent of schools. It is the purpose, as a result of these letters, to hold special classes for women.

To Mothers of Children in the Jersey City Schools:

The President's recent Proclamation has these words regarding food economy as a great patriotic duty:

"Let me suggest that every housewife who practices strict economy put herself in the ranks of those who serve the nation. This is the time for America to correct her unpardonable fault of wastefulness and extravagance. Let every man and every woman assume the duty of careful, provident use and expenditure as a public duty, as a dictate of patriotism which no one can now expect ever to be excused or forgiven for ignoring."

The world's food supply is short this year.

Every pound of wheat that one can avoid using, every ounce of fat that one can use instead of throwing away, is just so

much added to the food supply of a world that is going to need it sorely. And no matter whether one "can afford it" or not.

The teachers of domestic science in our schools have, of course, given much study to this very subject. At present they are making a very special effort to keep in touch with the newest suggestions from the Federal Bureau of Agriculture, The New York Food Supply Committee and such sources, and to teach their pupils that:

Many of the inexpensive foods are the most nutritious.

Preparation of the inexpensive foods may be varied in many ways to make them more appetizing.

We would urge, in behalf of the general welfare, that if you have a daughter in any of these classes you will make serious trial in your own family of the suggestions which we hope she is bringing home to you.

If none of your children has this work, would you yourself be interested to come to the school on one or more afternoons from 3 to 4:30 p. m., for a study of these same problems? If so, will you please fill out blank attached below and return it as soon as possible to the principal of the school.

Name..... Address..... Date.....191
Children in School No.....Grades.....

To the Principal of School No.....

If the Extension Classes in Cookery are held at School No.....3:00 to 4:30 p. m., I should like to attend those on the following subjects: (Number your first choice "1," your second choice "2," etc.

-Ways of using corn in place of wheat and potatoes (in cereals, breads, desserts, etc.)
-Cheaper cuts of meat—How to prepare and serve them.
-Appetizing substitutes for meat.
-Attractive disguises for left-overs.
-Ways of preparing dried fruits, vegetables, meats and fish for use in place of canned goods.
-Canning and drying of fruits and vegetables.
- (Add any other subjects you would like.)

Which would you prefer:

A. Yourself to do actual cooking under direction of the instructor?

B. Merely to watch demonstration by instructor, asking such questions as may occur to you?

(Underline your preference.)

What days of the week would you prefer.....

Would some other hour than 3:00 to 4:30 p. m. be more convenient for you? If so, when?.....

The letters are bringing not only direct replies but are arousing attention to the use of less popular foods, to left-overs, etc.

In finding work for the younger pupils, the Newark school authorities have not overlooked the immense value of the elementary-school organization as a means for giving currency to ideas. In this way they have followed the unceasing example of business houses who seek to utilize the school as a means of distributing advertising literature and merchandise samples. The plan of issuing a weekly food bulletin to be sent to each family has been hit upon as one means of enlisting the services of the younger children. The cost of printing such a bulletin for all pupils has been considered prohibitive and the children have been, therefore, asked to copy the weekly bulletin which has been printed in the school shop at the rate of one for each classroom. It has

been felt that this would be definite and really useful classroom work, that it would interest parents more than a printed appeal would interest them and that in every respect the bulletins would strike home. It has been suggested that the art department co-operate with the teachers occasionally to make posters out of the weekly bulletins.

In calling attention of teachers to the bulletins, the director of manual and industrial training prepared a circular letter quoting from the President's proclamation on food economy and giving the teachers a general idea of the necessity of co-operating in the food economy campaign. It was suggested to the teachers that they discuss each of the weekly bulletins, to inquire how many mothers tried the recipes, whether the pupils liked the dish, etc. It was recommended that the teachers make as much use as possible of the bulletins as writing lessons or dictation exercises and that every educational possibility be utilized.

The following is a typical bulletin as prepared for the schools:

BOARD OF EDUCATION FOOD BULLETIN No. 3.

Five Cents' Worth } Contains as Much (Twenty Cents' Worth
of Rice } Food as { of Potatoes

Starch is the basis of both, and potatoes are three-fourths water.

Many people do not like rice. This is because they do not know how to cook it properly, or how to combine it with other foods as cheese, peas and beans.

Please try this recipe as a substitute for potatoes, if you have never done so.

Turkish Pilaf.

1. Wash and drain one-half cup rice.
2. Cook till brown in one tablespoon butter.
3. Add one cup boiling water. Steam till water is absorbed.
4. Add one and three-quarters cups hot stewed tomatoes.
5. Cook till grains of rice are soft.
6. Season with salt and pepper.

Cracked rice bought in bulk costs much less than whole rice in packages and is just as good.

Other bulletins dealt with the use of corn meal in place of wheat flour, hominy and samp in place of potatoes, etc. It is expected that other bulletins will discuss the wheat crop, two hundred million bushels of wheat for the Allies, dried fruits instead of canned fruits, dried salmon instead of canned salmon, etc.

In closing, the author desires to express the hope that many suggestions as tentative as these will appear in print. He feels that the present emergency will allow of no delay in observing the results of experiments but that every plan which is commendable should be considered and, wherever possible, be tried out to meet the present situation.

THOSE great masters who have traveled the same road with success are the most likely to conduct others. The works of those who have stood the test of ages have a claim to that respect and veneration to which no modern can pretend. The duration and stability of their fame is sufficient to evince that it has not been suspended upon the slender thread of fashion and caprice, but bound to the human heart by every tie of sympathetic approbation.

—Sir Joshua Reynolds.

PERIOD FURNITURE

Conrad Weiffenbach and Anton Anderson, Instructors in the Technical High School, Buffalo, N. Y.

HISTORY AND DEVELOPMENT.



In preparing the following articles, two distinct aims have been kept in mind: First, the writers intend to give only such information on old English furniture as they can vouch for and as may be verified by the best authorities. Secondly, they hope to furnish sufficiently accurate material so that readers may be able to distinguish styles, to assign each to its proper period, and to know something of its history and development without a comprehensive study of the minor details of the subject. Finally, it is hoped that the articles will serve as a guide in the selection of furniture for the home.

It is proposed to deal only with English furniture, its history, development and evolution. Remarks concerning foreign sources of inspiration in design will be made occasionally to more clearly explain the different types and the close relationship they bear to one another. It is not intended to attempt here a history of furniture but to sketch briefly those national types which are being reproduced today by the designers who draw on time-honored sources of inspiration, and to illustrate a few of the more important characteristics of each type. It is hoped to show the transition from one period to another and incidentally to prove the old adage that "history moves in cycles." It will be seen that, as in the evolution of chairs, for example, the final stage of all evolution in furniture design is but a repetition of the beginning. The movement in the development of furniture design began with the classical and, finally, after all the old masters had had their fling, it returned or ended under the same influence and has been followed since 1820 by a period devoid of artistic originality.

It may not be amiss to define the terms *period* and *style* and to give some of the general causes which brought about the respective periods. The term "*period*" as applied to furniture design may be described as an interval of time during the ascendancy of a reigning house or during the reign of a monarch who had the power to change the furniture styles according to his or her interpretation, taste or feeling. *Style* is the manner of expressing the prevailing artistic feeling of a period. It was

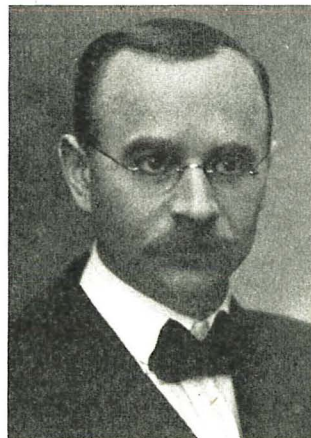
influenced largely by the prevailing temper and disposition of a people and of a monarch. The prevailing costume as much as the human figure had much to do in shaping the style of furniture, and the Gothic style was influenced almost entirely by dominant religious ideals. The period which includes the Tudor, Elizabethan, Jacobean, William and Mary styles was one of revival, new birth, awakening erudition and departure from the classics. In the Queen Ann style, signs of civilization, and peace, and later commercialism, asserted themselves. The Georgian period which included the styles of Chippendale, Hepplewhite, Adam and Sheraton, was one of culture. The Victorian, the last of the long periods was marked chiefly by commercialism.

Four general divisions are generally recognized in the history of English furniture. The first is the "Age of Oak," dating from about 1,500 to 1,660. It comprises the furniture attributed to the Renaissance and the transition from the Gothic. The second period is the "Age of Walnut," which dates from 1660 to 1720 and was characterized by a distinctly dogmatic English spirit and a varied change caused by Dutch and Restoration influences. The third period is referred to as the "Age of Mahogany" and dates from about 1720 to 1770. It was largely influenced by new ideas in design introduced from France. The fourth period known as the "Composite Age," dated from about 1770 to 1820. It was characterized by a combination of curiously unbalanced taste and an affectation for all things classical.

The dominant spirit, the customs and the manners of the people in all ages have been the constant inspiration for and influence on the design of furniture. Thus, in the Middle Ages, the inception of design was due wholly to the ecclesiastical spirit. There was also a practical necessity that all furniture be heavy and well made, because in those centuries men were clad in armor and required strong and heavily made seats. It has been left to the artistic perception of the modern artist and craftsman to evolve from these solid and almost barbaric forms, the lighter and more beautiful furniture built today. For centuries architecture was the chief source of in-



MR. CONRAD WEIFFENBACH.

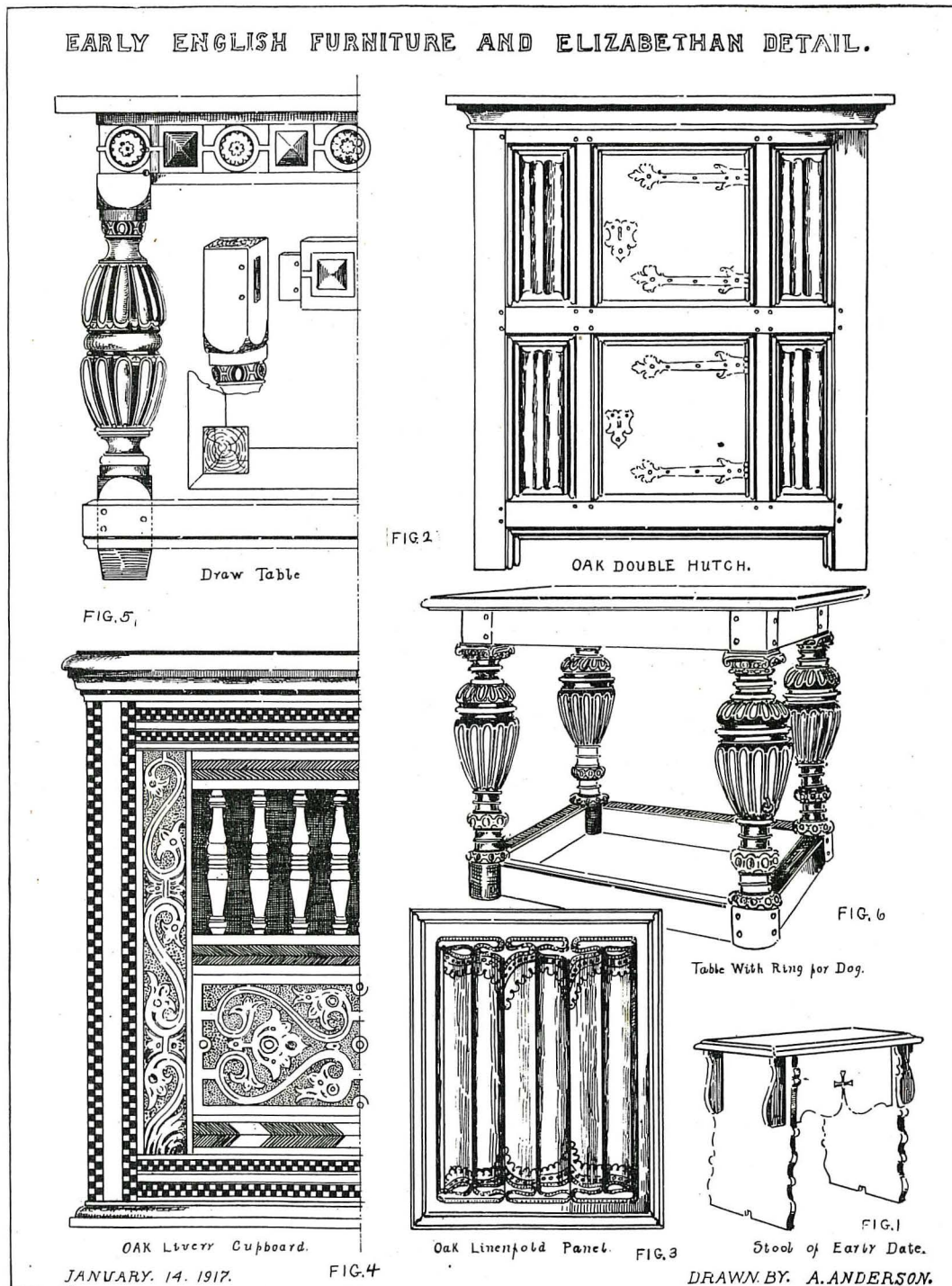


MR. ANTON ANDERSON.

spiration for the craftsman, and lacking imagination, he borrowed most of the required detail for his decoration from architectural sources, from metalwork or from the textiles.

France, Germany, and Italy in the luxuries and the artistic appointments of the great houses until the end of the fifteenth century.

About 1440 England took a sudden stride in



Figures 1-6. Early English Furniture.

During the Gothic period most English works of art were designed if not actually made by foreigners and this fact may account for the lack of contemporary taste in English furniture as compared with the taste found in continental countries. Art feeling in England was not inborn and did not proceed from natural impulses, so that the English were far behind

domestic culture and decorative furniture was for the first time gradually introduced into private homes. Before this time it had been confined largely to the Royal and Episcopal palaces and to the castles of the nobles. The poorer classes had been content with the most simple necessities. The first pieces of furniture made in England were mostly crude copies

of foreign examples, and it was not until the middle of the sixteenth century that the movement toward creating a distinct and national taste succeeded. All very old English furniture that has come down to us is made of oak and belongs to the three periods of the Age of Oak, the Gothic, the Elizabethan and the Jacobean. It is remarkable how much furniture of the Age of Oak due to the method of construction, has survived to the present time.

During the Middle Ages furniture was scarce and highly valued. The scarcity was due to the out-of-door life which the people led and which demanded few luxuries. Even the most wealthy possessed little furniture until the sixteenth century, when peaceful times became more conducive to domestic comforts. The personal requirements of women during these ages, unless it were something that added to their personal appearance, received little encouragement or attention from men. It was not until about 1540 that any fine furniture was set apart exclusively for women's use.

During the later years of the reign of Henry the Eighth, leather covered chests were used as furniture in rooms. The chests were studded with brass-headed nails and were commonly used for holding personal effects in traveling. The lock plates, keys and handles of these early chests were designed and forged from iron by English craftsmen. Nail head designs were introduced for the first time.

Sudden changes in the evolution of any particular style or in the taste of a people may be traced to important political events and changes in government, or to a simultaneous growth of original ideas proceeding from men of genius. The changes which came into furniture after the death of Henry the Eighth in 1547, may be attributed to a combination of these causes and to the fact that two women in succession occupied the throne. These women, Queen Katherine Parr who outlived Henry the Eighth, and Queen Elizabeth, wielded almost absolute power. A great change in manners and an appreciation of domestic comfort hitherto unknown resulted.

Stools were the only portable form of seat and were used in every room in the house, especially in the bedrooms. They served three purposes, as seats, as small tables and, in times of strife, as weapons. For the latter purpose, they were used offensively and defensively and could be thrown with deadly effect. The stool shown in Fig. 1 is of Gothic influence and was built before 1535 by English craftsmen.

By the middle of the sixteenth century the temporal powers were on the decline in Italy but the art which had poured into England from this source had greatly enlightened the English craftsmen so that, without the aid of foreign designers and craftsmen, they could create and execute designs that were

both distinctive and national. Out of this newborn English ability for originality which incorporated in itself some of the hard and fast lines of classical design, the style known as Elizabethan sprang into existence.

The Elizabethan Style.

The reign of Queen Elizabeth was from 1558 to 1603 but the Elizabethan furniture did not attain its full development until James the First had ascended to the throne and almost until the eve of the transition of the style which finally resulted in the evolution of the Jacobean style. The Elizabethan styles bore close resemblance to the models set by the Italian and French artists and craftsmen who were brought over to England by Henry the Eighth. The sources of inspiration which supplied this style were: First, the pure Italian Renaissance, second, the French offspring of the Renaissance, the Francois-Premier, third, the "Henri-Deux" and fourth, the Renaissance of the Netherlands. These four distinct and powerful influences were brought to bear in England on the Elizabethan style and one is likely to find a combination of details from each in a single piece of furniture. The characteristics of the style may be better understood by studying the details in Figs. 2, 3, 4, 5, and 6. The Oak Hutch (Fig. 2) was hung on the wall and was used for the same purpose that the cellarette of today is used. The hinges and escutcheons were of hammered copper. Fig. 3 is an example of the most extravagant form of "Linen-fold Panels" used so frequently during this period. It was carved to imitate the form of a napkin and was used to decorate cupboards, wall panels, etc. Figure 4 is an oak "Livery cupboard," also called a "Bread and Cheese Cupboard." It is the ancestor of the sideboard or buffet of today. Its familiar name indicates with sufficient clearness, the purpose to which the article was devoted, namely the storage of eatables. The name suggests the simple fare of the old days when the prime object of eating was to satisfy an honestly created hunger and not to tickle the much abused palate with all sorts of confections. The cupboards were not of English origin but were variations of old French, German, and Flemish examples. The form in which they appeared in England was, however, characteristic in every respect of the national temperament of English artists and craftsmen. The spindles in front formed a ventilator. They were placed close enough together to prevent children and domestic animals from helping themselves. The strapwork is one of the distinguishing characteristics of the style. The inlay of "chequer" design was also quite prominent between 1500 and 1600. Figure 5 shows a Draw Table built about 1650 and is the first example belonging to the Elizabethan period. It illustrates probably the earliest known method of increasing the top surface of a table by

means of slides. Out of this form our present day extension table has grown.

Figure 6 shows a drawing of a table said to have been used by Queen Elizabeth. It was built about 1575. The ring on one of the legs is said to have been used by "Queen Bess" as a place for tying her dog. The turned legs, the acanthus carving, the heavy under-framing and the strapwork are strong Elizabethan features and some of them are always to be found on creations of this style.

The Jacobean Style.

The Jacobean style comes under the rule of the Stuarts which began in 1603 with James I and ended in 1688 with the death of James II. It continued during the Commonwealth, the Councils of States, the Governments by Parliament and the Protectorates of the Cromwells. The growth of the Jacobean out of the style which immediately preceded it was very gradual. The older forms resemble the Elizabethan so closely that it is hard to distinguish them

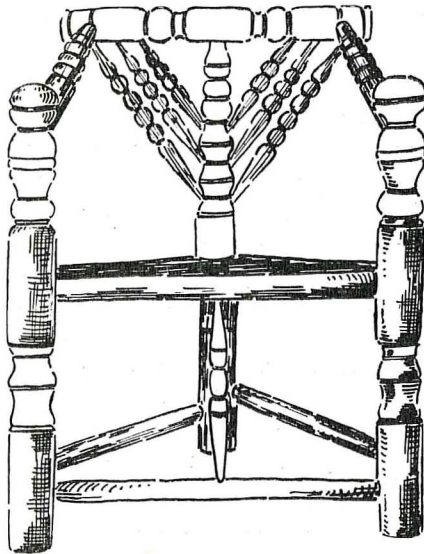


Fig. 7. Early English Chair.

from one another. In apportioning the various characteristics of the older English styles to their proper periods, we are guided to a certain extent by the practice of some of the wood carvers of dating their works.

During the time of the Stuarts all decoration, including inlay, carving and decorative painting was done by skilled furniture artists who were induced to come to England for a time at high rates of wages. The decorations which they produced were almost entirely devoid of ornaments or fantastic spirit and the brilliance associated with the older styles which were the outcome of the temperaments of those responsible for their inception. On the other hand, the furniture was characterized by a rugged honesty of purpose, simplicity of construction and severity of form. It was made to bear the brunt of the stern times when utility and lasting qualities were held in high esteem by our forefathers.

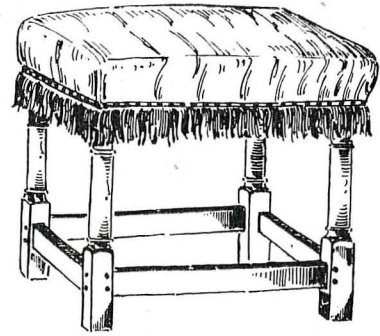


Fig. 8. Jacobean Stool.

One of the characteristics of the Jacobean style is the carving which was cut into the surface of the pieces and which never projected beyond the same. Another form of decoration which is now styled scratch carving was extensively used. This carving consisted mostly of simple leaves and stems, the outlines of which were simply scratched or cut on the surface. Jacobean furniture was always built by a cabinet maker and decorated by a carver, for specialization of labor had already begun to take root at this early day. This specialization explains the reason why carvings were never applied to the surface.

It remained for the Jacobean designers to develop the sideboard out of a mere trestle into a long, low cupboard resembling the present day buffet of this style. Another important piece of furniture which was begun was the chest of drawers. It originated with the oak chest which was raised so that a drawer could be placed under it. As the necessity for more drawer space grew, twisted or turned legs were placed under the chest. It then continued to grow in height and in ornament until it became the "tallboy" of the eighteenth century.

It was during the Jacobean era that the chair began to take off some of its superfluous heaviness

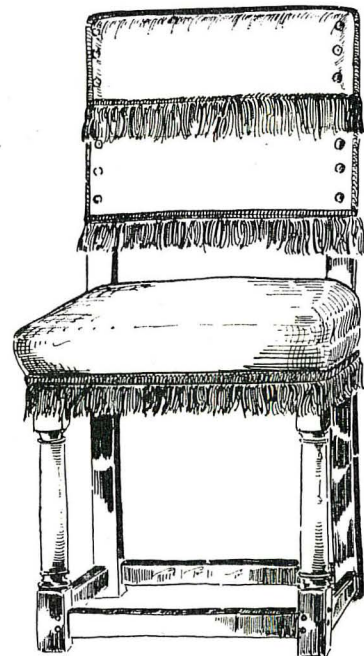


Fig. 9. Farthingale Chair.

and to show a slight suggestion of grace of form. Figure 7 represents one of the first movable forms of chair made in England. It was introduced from the Scandinavian Islands which were the source of some of the best oak used in the manufacture of furniture. Early chairs of English manufacture are extremely rare. In Gothic times and even later, they fulfilled no common office as they do today. They were used only by the lord and lady and this accounts for the fact that an initial or emblem is usually found carved on them. Until Jacobean times benches, stools and the tops of chests were the ordinary forms of seats

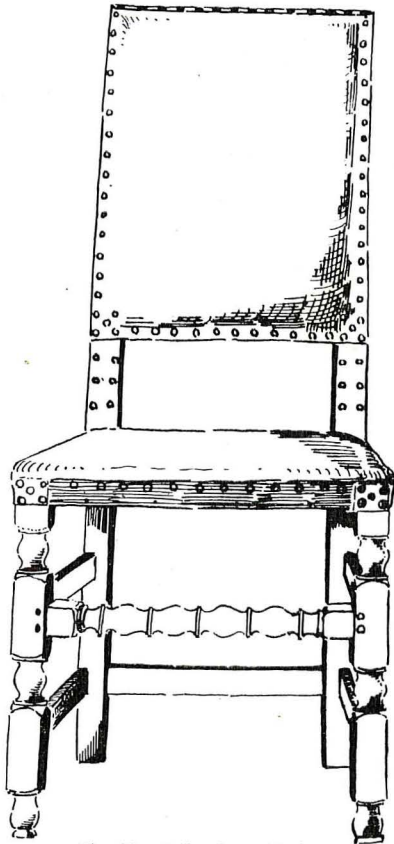


Fig. 10. A Jacobean Chair.

for a considerable amount of authority was conferred by the occupation of a chair. Later on chairs were also provided for guests. Thruout the whole historical evolution of the chair, the changes that took place in costume practically governed the shape and general character of the chair. During Jacobean times, all chairs had arms to support the heavy hanging sleeves that were in vogue. For decoration a large piece of rich material was thrown over the chair and it was not until the lighter forms were used that stuffs were nailed to the wood. In 1530 the X-shaped chair was introduced for the second time. The top extremities were finished with embossed metal caps, originally gilt, and the whole of the woodwork was left in the rough, showing that it was intended to be covered with material. Leather was generally used and the back was hung with velvet, stretched on leather, and was embroidered with designs in keeping

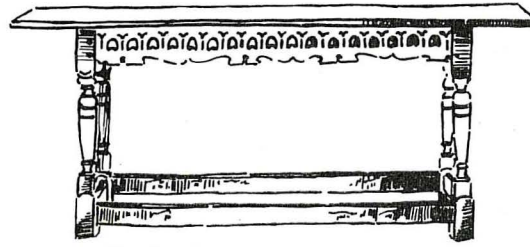


Fig. 11. Jacobean Ornamented Bench.

with the times. Traces of this embroidery still existed in England up to 1836. This was the first upholstered chair in England.

Figure 8 shows a heavily stuffed stool. With a sofa to match, this type of stool was used exclusively under James I, to accommodate women's dress and to permit of lounging. The king, who was a dissipated character, found this type of furniture exceedingly comfortable. It was influenced by the French court of Louis XIII, and was inspired by French taste. Later it was copied by the wealthy families of England.

Figure 9 is an early example of what was termed the Farthingale chair. About 1612, when the proportions of ladies' costumes became outrageous, this type of chair, without arms, was found better suited for the extreme style than the older types of chairs. The king finally issued orders forbidding ladies to attend the masque in those monstrous gowns owing to the seat room they occupied.

Figure 10 is a Jacobean chair built during the latter part of the reign of Charles I, or at the beginning of the Commonwealth under Cromwell. This is one of the ancestors of the open back chair. The knobbed turning and the strong construction, which consisted of mortise and tenon joints, blind-wedged

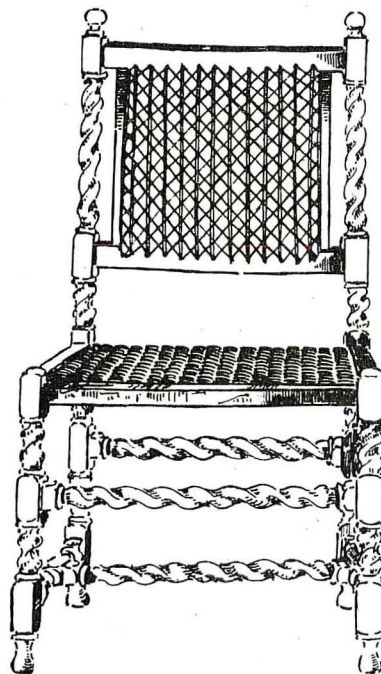


Fig. 12. Jacobean Chair with Typical Turnings.

and pinned thru the legs, were strong features of this period.

Figure 11 is a good example of an ornamented bench built about 1635. Tables of the same style were used for dining. After meals the benches were placed upon the heavy stretchers under the tables. The construction of this bench is similar to that of the chair in Fig. 10.

The chair in Figure 12 is a Jacobean creation under Charles II. It shows one of the first examples of caning, and illustrates the favorite style of turning of this period which was executed by the hand carver. Today similar carvings, which required days and weeks to make, are turned in a few hours on a twist lathe that will cut any pitch. In Jacobean times the cane was gathered and prepared at a considerable expenditure of time and labor. Today the same cane may be bought ready-made and easily applied by a process which will be thoroly explained in a later article.

The next development in chairs was the open back chair which was an exact duplicate of the chair shown in Fig. 12, except for the caned back which was replaced by twist turned spindles to match the rest of the turning. This chair was made during the entire reign of Charles II and well into the reign of James II.

One of the last chairs made during the Jacobean era is shown in Fig. 13. It was built about 1685 and shows wonderful progress in design and construction as made during this period and which marks the beginning of the use of the "Cabriole" leg in

(To be Continued in August Issue)

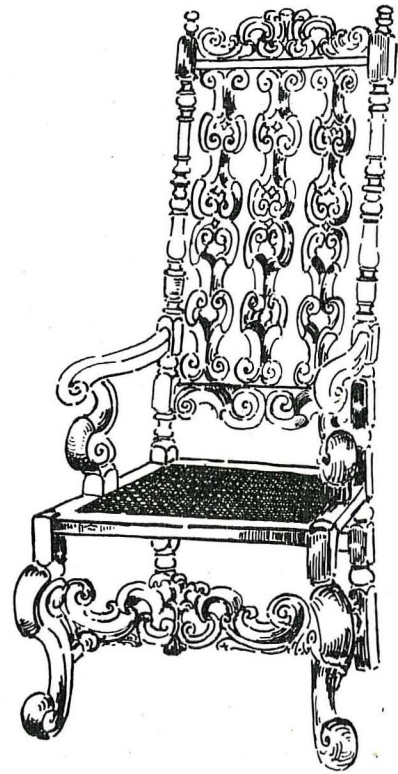


Fig. 13. A Late Jacobean Chair.

England. The scroll slats in the back, and the scroll strap work are splendid applications of these distinctive characteristics. We owe much to the designers and craftsmen under the restless and troublesome reign of the Stuarts for their dogged persistence in creating things beautiful.

Clay Modeling, Plaster Casting, and Sculptural Finishing

John R. Bell, Instructor in Building Arts, State Reformatory, Huntington, Pa.

(Second Article)

FINISHING AND PAINTING PLASTER CASTS.

THE commercial value of finished sculptural casting sold by the street venders of this ware, cannot be determined by the price for which they are sold; they are mostly imperfect castings painted by apprentices and sold for an amount equal to the cost of the material used in their making. There is always a demand for good ware, and it will bring a good price as the catalogs of the manufacturers and stores indicate. The painting more than anything else determines the price.

That it takes an artist to do first-class finishing and painting of these casts is a mistake. Even the artist must learn this particular class of painting if he wishes to make it a commercial success. In the various bronze finishes especially, a proper knowledge of the methods of procedure are necessary to success.

Before describing particular finishes I will give the following list of materials necessary to produce

almost any shade necessary. A can of white lead, Japan black, Japan dryer, one tube each of marine blue, chrome yellow, red vermilion, raw umber, burnt umber, raw sienna, burnt sienna, Indian red, venetian red and yellow ochre; one pint bronze liquid; one pound each of grey yellow ochre and lamp black; either a can or several papers of gold and silver bronzes are necessary and for a larger variety of the following: brass, copper, fire, green, aluminum, dark green, dark and light blue, yellow green, citron yellow, new green, violet, amaranth, lilac, marine blue, blue green, emerald green, olive green, red, purple and orange; one quart each of linseed oil and turpentine. While a large variety of brushes are desirable, only a few are necessary. Any of the artists' brushes from 0 to 9 will suffice for the small brushes. I find that the two most often used are Nos. 4 and 9. For larger work the artists' $\frac{1}{2}$ and $\frac{3}{4}$ inch flat brushes are the most often used, and a No. 8 sash brush is commonly used for prime coat work.

If the paints are bought in cans, they should be kept covered with a lid while not in use, to prevent a scum from forming on the top and drying out, as well as the oil from becoming fatty. From the list of paints and material prescribed, the following shades can be produced. I have a chart made of these and framed, which hangs on the wall in my clay modeling and plaster casting department.

Buff: white, yellow ochre and red. Bronze green: chrome, green, black, yellow, or black and yellow, or black and green. Chestnut: red, black and yellow. Chocolate: raw umber, red and black. Copper: red, yellow and black. Claret: red, umber and black. Cream: white and raw sienna. Changeable: red, green, lightened with white. Drab: white, raw and burnt umber. Dove: white, vermilion, blue and yellow. Flesh: white, yellow ochre and vermilion. Freestone: red, black, yellow ochre and white. Gray: white lead and lamp black. Gold: white, stone ochre and red. Limestone: white, yellow ochre, black and red. Lemon: white and yellow. Lilac: white and violet. Orange: yellow and red. Olive: yellow, blue, black and white. Pearl: white, black and blue. Purple: violet, with the addition of red and white. Pea green: white and chrome green. Peach blossom: white, red, blue and yellow. Rose: white and modder lake. Sandstone: white, yellow ochre, black and red. Straw: white and chrome yellow. Violet: red, blue and white. The predominating colors used in producing these shades are mentioned in their order, but it must be remembered that, only thru practice alone will the student be able to correctly produce them without the aid of a color chart, which I advise for beginners.

We will now proceed to the finishing of the Shakespeare bust described in the June number. All casts should be first coated with white lead and linseed oil, no turpentine. This acts as a filler, closing the pores of the plaster and rendering the surface smooth. The oil being absorbed in the plaster will not produce a gloss when the flat or dead colors and bronzes are applied.

Only flat paints are used in finishing plaster casts; in other words, paints not containing linseed oil,

which produces a gloss and is not at all desirable. It makes a cheap appearance on this class of work.

After the white lead coat is thoroly dry, the cast is painted with gold bronze darkened with lamp black and mixed with bronze liquid and orange shellac thinned with wood alcohol. The shellac should at all times be kept at the pouring state, and the bronze should have enough lamp black added to give it the appearance of stove polish.

The shirt, cloak and pedestal are shadowed, after the bronze coat is dry, with dark green and white lead thinned with turpentine. Immediately after painting this shadow coat is rubbed well with waste or a soft cloth, removing this shadow coat from the high places as well as some of the lamp black in the bronze. This leaves the bronze exposed on these high places and the shadow coat in the under-cuts and low places, producing a very ancient bronze appearance.

In finishing the hair, less lamp black is mixed in the bronze and is shadowed with dark blue and white lead thinned with turpentine and rubbed, producing a less ancient appearance, or mediaeval bronze.

The cord and tassel, buttons, lace on the cloak, face and neck are given one coat of orange shellac, producing a more conspicuous and rich effect. This is followed by one coat of white shellac and rubbed very lightly with powdered pumice stone and linseed oil.

In finishing plaster casts in colors, it is essential that they be first given one coat of white lead and linseed oil as a filler to make a smooth surface, and also that the shadowing and tinting be done before the ground or main color has dried, as it is impossible to properly blend colors together when the background is dry. I would advise the beginner to secure a finished model to pattern after for the first few jobs that are attempted, and by reference to the tables I have given in this article they can, after a little practice, produce a perfect likeness to that which they are patterning after.

IN our country and in our times no man is worthy the honored name of statesman who does not include the highest practicable education of the people in all his plans of administration.

- Horace Mann.

INDUSTRIAL-ARTS MAGAZINE

Board of Editors

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EDITORIAL

THE EVOLUTION OF THE IDEALIST.

STAGE I.

Beauty is my soul's delight and sustenance. I cannot reconcile myself to drudgery for drudgery is toil without inspiration. How fortunate am I cast into a world of drudgery to find myself exempt! I rise from dreams of beauty in the morning and find the day inviting me to spread the gospel of beauty. I dine fastidiously as becomes one of ideals and inspiration. My heritage brings with it the privileges of power and criticism. Less favored mortals step aside and let me pass, but I condescend to reach down to them a helping hand. I command them to hold their eyes aloft and share with me the vision of a world transformed by beauty.

STAGE II.

Yet I somehow feel that I am isolated by my superior sight. Oh! that I had lived in those good, old days when art was a part of the day's work. Work seems infectious. When I go among my busy fellows and see them so interested in their menial tasks I am almost tempted to work with them.

STAGE III.

I am now a workman among workmen; taking long hikes in the morning; digging trenches at the hot noon day; on post duty during the long hours of the night; sinking into a sleep that knows no dreams when the opportunity comes. War has made me work and men must work.

STAGE IV.

Disciplined by work my muscles now are fit. My mind is clear. My heart is right. I still have visions but they are peopled by my fellows who do not pass me by. We work together shoulder to shoulder. War has its blessings.

SPEED UP.

THRU the excitement and the hysteria of preparing for war, a few state educational institutions and a larger number of city school systems have reduced the appropriations for schools and in a few instances have shortened the school year. A few city and state schools have excused their students to allow them to go to work. While the spirit which prompted this may be commendable from a patriotic

viewpoint, from the standpoint of ultimate results it is the direct opposite.

If schools make boys and girls more efficient; if they are necessary to the public welfare in time of peace; if they contribute to the efficiency of the nation as a whole; if education is necessary to political and economic advancement, the need for schools and schooling becomes all the greater in time of national stress. To close our schools, or to allow them to relax their efforts in such times is either short-sighted or is an admission that schooling is a luxury that can be foregone with impunity.

Our schools are our greatest nationalizing institution and at a time when all the forces that tend to disintegrate our nation are exerting their full strength, our schools should be reinforced and speeded up. School terms should be lengthened rather than shortened. Appropriations should be increased instead of reduced. If the schools have it in their power to increase social and economic efficiency, they should speed up, work more hours in the day, and more days in the year, and if their work is crippled by lack of buildings and equipment, these should be provided at once.

This is not the first, nor will it be the last time that every man and woman, boy and girl will be called upon to "do their bit." Perhaps the opportunity to do something so spectacular will not be afforded and let us hope that the sacrifices required will not be so great, but every citizen is and will be called upon to do his bit every day toward making America a better land to live in. And if every one will do his bit every day of every year, it may be that this will make the supreme sacrifices of war unnecessary.

It should be borne in mind that we will need efficient men and women tomorrow, next year, and the year after. If large numbers of our ablest young men are to be sacrificed, the need for others to replace them will be greater than it has been in fifty years. Let us not cripple our future by shortsighted economy masked as patriotism.

A PROPHECY.

THE most optimistic prophet must reason that large numbers of teachers and college students who would become teachers will be engaged in war during the coming year.

This prophet must also realize that the United States can be assured of the usual increase of children to be cared for in our public schools.

Perhaps the greatest school problem of the next year will be to find capable substitutes for those fine young men who have been teaching manual courses and who will now go into military service.

Our teaching standards will be no higher next year under the necessities of war, but we have the conviction that when our soldier-teachers return

they will have acquired additional experience and purpose for their work, and the raw recruits in the teaching profession who have substituted for them will find standards raised which will tax their energy and skill.

It is interesting to note in prospect for next year's school activities, that our educational progress has not suffered from our national crises of the past in proportion to the seriousness of these crises. It was during the darkest hours of the Civil War and when Gladstone pronounced the United States a passing nation that our Great President Lincoln signed the bill that gave to the Colleges of America the land grants that made our splendid system of schools possible. It was during the financial depression of the early 90's that our common schools grew in attendance in greater percentage than in years before or since. Whatever may come during the next year we are convinced that the spirit of Lincoln will prevail to care adequately for school interests. We will not grind our seed corn.

IT CAN'T BE DONE.

SOME people are too skeptical for their own or others' good. They often argue, discuss, and even dispute established and evident fact. A new proposal or an unusual undertaking is commonly met with the oracular assurance that "It can't be done! It's impossible!" Even liberals become conservative, when someone else becomes more daring than they and projects new theories and blazes a new path.

Practically every modern invention has at one time or another been pronounced impossible. All modern advances in the thought and practice of educational movements have had to struggle slowly forward against the combined opposition of ignorance and conservatism whose slogan has always been, "It can't be done!"

Perhaps educators, as is sometimes claimed, should be conservative in the sense that they should not take long steps until convinced of their merit and safety. But it should not take a generation to convince them. It is a common assertion that certain proposals in education are all right in theory and much desired in practice, but that they are impossible to realize, under present policies of administration. It is not far from the truth to say that whatever thought and experience determine to be needful and desirable for the education of the youth is entirely possible of accomplishment. If administrative difficulties stand in the way, shall we say that the principle is correct but that we dare not attempt to put into operation? No. Administrative difficulties must be removed. The problem must be solved. For in this country, whatever can be shown to be desirable for our children must inevitably find its establishment in spite of apparent obstacles.

Let's not say things are impossible. Let's

try them, if they appeal to our sense of propriety and of need.

THE READING OF TRADE JOURNALS.

MOST teachers of the industrial arts appreciate the need and value of reading the technical periodicals in the fields upon which their instruction and shop practice touch. They urge that their students subscribe for these papers when later the boys have actually entered upon a trade. In this connection the proprietor of a sheet-metal works in a Michigan city recently made a valuable suggestion in a letter to a large manufacturer of sheet-metal tools. He said:

"The writer has had fourteen years' experience in the metal trade, a graduate pattern draftsman, but feels that he is just beginning his career in this work, for nearly every day one learns something new. The trade journals are a great assistance in this as they bring new ideas to one. ° ° ° ° The writer feels that every young man that finishes his sheet-metal course should be given a year's subscription to all of the metal journals published, thus creating in him a desire to continue his studies and learn new ideas from the 'other fellow.' "

The suggestion above is worthy of serious consideration, and teachers of trade subjects can render a valuable service to their students if they will give them the habit of reading the trade papers in their respective fields. The trade press is today the strongest single force for improving the technical knowledge and the skill of men in the trades. The reading of the best trade papers is a certain means of keeping the worker abreast with the latest methods and improvements in his craft. The trade papers reach far more men than the evening and continuation schools and their use should be encouraged by every shop teacher.

CHANGES IN ADDRESS.

READERS who will change their addresses temporarily for the vacation months or permanently for the coming school year are earnestly requested to notify the Circulation Department of the I. A. M.

The exact forms of both the old and the new addresses invariably should be stated so that prompt and accurate mailing service may be continued. It should be remembered that complaints for non-receipt of subscribers' copies cannot be honored unless made within fifteen days after date of issue.

Do that which is assigned you, and you cannot hope too much or dare too much. There is at this moment for you an utterance brave and grand as that of the colossal chisel of Phidias, or trowel of the Egyptians, or the pen of Moses or Dante, but different from all these. Not possibly will the soul, all rich, all eloquent, with thousand-cloven tongue, deign to repeat itself; but if you can hear what these patriarchs say, surely you can reply to them in the same pitch of voice; for the ear and the tongue are two organs of one nature.—*Ralph Waldo Emerson.*

A Short Course in Electrical Engineering for Practical Workers in the Trade

Arthur L. Smith, Appleton, Wis.

A new problem was introduced into our teaching experience when the Appleton Industrial School decided to include in its night school curriculum, a short course in practical electricity for workers in the field. At the time of its introduction, the teaching staff was apparently at a loss to know exactly how to approach the subject in such a manner as to appeal to the class of men which would attend. After numerous conferences we decided that one logical feature was to supply to the students the information that they particularly needed, (rather than offer a course which was very general in character) as well as specific in details, and by so doing probably aim far above the genuine needs of the group.

In preparation for this course we devised a system of 24 lessons on the popular subjects in which workers were usually interested. The titles for the lessons were suggested by a proxy vote of interested men and in this manner we were assured that the first step in our course would not be very liable to prove unpopular. Our second aim was to let the men conduct the course as far as expedient. This, we concluded, was one of the proper steps necessary to hold interest, and later in our work we discovered that this was a most important step. In the absence of a properly equipped laboratory it is a serious matter to keep the interest of an adult class from seriously lagging, in a course of this nature, and the chief key to our success was the matter of individual responsibility in recitation, assignment, demonstration, and home study.

Our class meets once a week, on Tuesday evenings at seven thirty o'clock in the lecture room of the high school laboratories. We started with an enrollment of 47, which dropped to 45 after the aim of the course had been fully explained. At the end of twenty weeks the attendance has ranged from 45 to 22. At alternate weeks about ten of our men are on tower duty, and so cannot attend class on that evening.

We have workers from all trades and professions, but more especially from the electrical trade. Our enrollment includes foremen, machinists, linemen, chemists, superintendents, division men, and many others.

Our class period is one hour and thirty minutes in length, and we have divided it into four distinct divisions. The assignment occupies twenty minutes, and includes numerous suggestions of problems for research and special study. We use no specific text, and our lessons consist of merely a mass of questions, arranged in such an order as to incite interest, and develop interesting topics for class discussion. Our class is well supplied with standard reference texts, which are used constantly, and have proven very popular with the men.

The class lecture generally lasts thirty minutes or less, (never more) and includes such material as the instructor shall give to the class, including demonstrations, instruction on theory and operation, mathematical instruction, and incidentals which tend to stimulate interest and solve the problems of the men.

The large electrical manufacturing establishments of the country have nobly responded with many blueprints, bulletins, special drawings and specific information as to questions, whenever they were called upon, and part of the lecture time is devoted to a study of this material. The blueprint and drawing phase of our work has proven to be of exceptional interest, and there is never a recitation on account of the special features, which are usually more or less of a novelty, as well as instructive. I have prepared many charts, and mounts of machinery and methods of installation, as well as ways of preparing certain electrical equipment, such as insulation fuses, etc. This feature is attractive and interesting, and always leads to new problems, and is a splendid tonic for the *lag* which is the unsurmountable obstacle to so many teachers.

We had a distinct understanding at the beginning of the course that the instructor was a long ways from being an expert electrician. We encouraged a splendid spirit of mutual helpfulness. Many questions and problems I could not answer nor solve. The men often could collectively work out the solutions, and when that became an impossibility I took the matters in debate under advisement until the next meeting. In the meantime I wrote a manufacturer, or engineer, and gave him a problem, and from 26 letters so submitted, to date, I have yet to receive my first refusal of an answer.

The next division of our program consisted of thirty minutes of discussion of the problems of the lesson. Personal testimony was a great feature of this work, and the men exhibited pride in being able to explain and demonstrate how they performed certain tasks, or supervised special kinds of work. There is a world of possibilities in this portion of the program, and as soon as the men feel that they are responsible as individuals for the success of the class they will not hesitate to take hold of the work and make it interesting. One difficult feature of this part of the work is to confine the discussion to the topics under consideration. There is a great tendency to drift around, and if the drifting process is allowed to continue, the class will soon lose the train of thought, and the interest lag comes into prominence. When the lag takes possession of men who have worked ten hours during the day, it is a most serious and difficult proposition to recover the interest. This is a time when the instructor must be alert, and tend strictly to business. Do not allow one man to monopolize more than a reasonable amount of time. Some men are so full of good ideas, and it is very difficult to stop their conversation, when once they are started. As a rule the class does not care for a one-man monopoly however good he may be, and if you are not tactful enough to control the general discussion without causing offense, you will find yourself in a serious predicament before you have gone very far.

The last ten minutes of the class hour are spent in a quiz. This is usually a direct quiz by the instructor, but it may result in counter quizzing between the men. This latter feature is by no means harmful, and often it has developed first-class problems for future discussion. I often give the class the privilege of writing on some operating engineer's examination. The men are very anxious to pass these tests and they always turn out to class in full force when a special examination is going to be given. I select the questions on special subjects, and often offer suggestions during the quiz, in order to make the work as instructive as possible, as really that is the aim of the quiz.

A class of this kind requires a great sacrifice of time, on the part of the instructor. Often the preparation for one meeting will require from ten to twenty hours of solid preparation. When charts and special work are prepared the time element is many times greater. From a wage standpoint the work of such a class is a failure as far as the instructor is concerned. A teacher who keeps his eye on the clock will have to demand a very good salary if he is to feel satisfied with his investment. A course of this kind requires a good laboratory, and the complications are numerous when laboratory facilities are absent. The great problem of holding men in a night school class is to give them the instruction they want, and by the way they know exactly what they are after, rather than to attempt to cram down their throats a highly technical and academic meal which is not suited to their digestion.

Make them individually responsible for the success of the class. Cultivate the spirit of mutual helpfulness. Keep the spirit of democracy in the classroom, and make the men feel that they possess capabilities as well as the instructor. Watch the old hoodoo, interest, lag. When it appears put it out of commission while in its youth, even if it requires

a splendid sacrifice. Have a firm confidence that you are capable of any task and when you find a problem which you cannot solve, and there will be many, make a frank confession of your inability, and give the class a chance to prove its superiority, if it can. Every meeting should have a distinct aim, and it is the business of the instructor to correlate the results, and present them to the class in such a manner

as to realize something very definite from the course. Cultivate the attitude of research, and explain to the class the advantages of special training in their profession. If you are frankly honest with your men and inject a copious quantity of real class spirit into your group, I feel that your evening class in electrical engineering will not lack the elements of a genuine success.—*Address.*

RED CROSS WORK FOR SEWING CLASSES

Many teachers of courses in clothing have regretted that almost all of the practice in garment making was upon articles for personal use and adornment. Much of this sewing has been upon fine lingerie and with elaborate hand embroidery. There is now an unusual opportunity to awaken within girls and young women, instincts of unselfishness and self-sacrifice and to teach co-operative effort in the production of garments needed in a great philanthropic movement of national importance.

It is, therefore, suggested by the United States Bureau of Education that girls and women in sewing classes in colleges, high schools, and elementary schools, lay aside personal sewing and give regular sewing time and as much extra time as possible to the making of garments for the Red Cross Association.

This production of garments can be in co-operation with the local Red Cross Chapter, or it may supplement their efforts or even precede such organizations, since only a short time remains and the work should not be delayed because of lack of local organization.

It is suggested that in co-educational institutions of higher education, young men of the school be given the opportunity to supply the funds for materials and such articles as are purchased ready made. In public schools co-operation with the local Red Cross will make possible an adequate amount of cloth for the work of the classes. In localities where there are textile mills the mill owners have shown a willingness to give liberally of all cloth required.

The public school classes in sewing may find that it is most desirable to sew for the Foreign Relief. There is no chance of there being an over supply of any articles and, as soon as ships can be secured, these will be sent to the countries in which there is greatest need. The Foreign Relief is suggested as the desirable type of work to be undertaken in public schools because at present the need in foreign countries is most pressing. When local circles of Red Cross members are organized for the Home Relief work, as they are in many colleges and universities, then the Home Relief sewing should be undertaken. Starting the work at this time necessitates overtime service by teachers in collecting material and patterns and in cutting garments and planning work, but as a service to our nation none will begrudge the sacrifice.

When the garment making is well under way, letters should be addressed the American Red Cross Association, Washington, D. C., requesting circulars 154 and 164, and the new circular on Foreign Relief. These give explicit directions for packing, marking, and shipping of supplies.

Preparation should be made to co-ordinate next fall regular classwork in clothing with charity organizations as well as with Red Cross Chapters. Students should be urged to save all clothing in a clean, sanitary condition for winter work in remaking, that economy may be practiced and well made clothing be supplied to those in need. Clothing classes should save every cutting that these may be gathered for paper manufacturers.

A campaign can be started in every school to stop the waste of rags now prevalent in almost all country and city homes. These should be washed and saved, if white, for use in hospitals and when unfit for this should be collected, cleaned and sold for other purposes.

List of articles needed for Red Cross Relief which may with advantage be made in Home Economics clothing classes:

Towels, Dish—Size, 18 by 30 inches. Material, Good quality blue (or red) bordered cotton crash, 18 inches wide cut 32 inches long.

Wash Cloths—Size, 10 inches square. Material—Made from old Turkish toweling, heavy towels, or counterpanes. If desired, a cheap stock article of Turkish toweling or similar material may be purchased ready made.

Hot Water Bag Covers—Size, 13 inches by 15 inches. Finish with draw string at top. Material—White or unbleached outing flannel (Domett) or equivalent quality.

Gowns, Operating (for Doctors and Nurses)—Two sizes, 16 and 17. Materials—"Pepperell," "Middy," "Lonsdale," or "Hill" twill, or equivalent quality. (One-half dozen in each package, equal quantities of each size.)

Hospital Bed Shirts—Two sizes, 18 and 20. Material—Twill, same as for operating gowns; muslin, same as for muslin bandages may be used, but this material is not so desirable. (One dozen in each package.)

Pajamas. (Three suits in each package.)—Two sizes, 38 and 42. Materials—Cotton oxford (cheviot), "Riverside," or equivalent, Gingham: "Bates," or equivalent. Seersucker: "Bates," or equivalent. Outing flannel: "Amoskeag 1921," "Teazledown," or equivalent for "fancy" patterns. Soft grays in plain or striped outing flannels are recommended.

Convalescent Gowns or Bathrobes. (Three in each package.) Two sizes, 38 and 44. Material—"Beacon Mills" bathrobing, or as near this grade as the market affords. Soft browns, grays or blues are preferable.

Shoulder Wraps or "Nightingales". (One dozen in each package.)—Size, 2 yards long, 1 yard wide or less, according to width of material. Material—"Daisy Cloth," or equivalent.

Substitutes for Handkerchiefs. (One dozen in each package.) Size, about 18 inches square. Material—Old linen or muslin, hemmed or unhemmed.

The Red Cross Nursing Service has arranged that authorized patterns for Red Cross garments will hereafter be on sale at all local drygoods stores handling commercial patterns. Red Cross emblems are to be used only on pajamas, hospital bed shirts, shoulder wraps, and bathrobes. These emblems can be secured at \$4 per thousand from the following Red Cross Distributing Centers:



Working for the Red Cross, State Normal and Training School, Oswego, N. Y.

83 Newbury Street, Boston, Mass.; 411 Fifth Avenue, New York City; 221 South 18th Street, Philadelphia, Pa.; 1025 Belvidere Terrace, Baltimore, Md.; 2525 Euclid Avenue, Cleveland, Ohio; 67 E. Madison Street, Chicago, Ill.; 2200 California Street, San Francisco, Cal.

Directions for shipping made articles can also be secured from any of these addresses.

VOCATIONAL EDUCATION IN PRACTICAL ARTS AT THE PORTLAND CONVENTION.

The Department of Vocational Education and Practical Arts will hold three sessions during the Portland Convention of the National Education Association. President W. J. Bogan has prepared a program which, it is expected, will arouse a great deal of interest. The program will be related to the general patriotic topic of the convention; namely, education for patriotic service. The program in detail is as follows:

Vocational Guidance a Distinct Function of the Public School, Lester W. Bartlett, Pomona, California.

The Training of Girls and Women for Trades and Industry, Mary Schenck Woolman, Boston.

Extension of the Field of Home Economics in the School Curriculum, Alice Ravenhill, Shawnigan Lake, Vancouver Island, British Columbia.

Vocation of the Home Maker, Cree T. Work, Venice, California.

Discussion lead by Agnes Houston Craig, head of the Department of Home Economics, the State College of Washington, Pullman, Washington.

The Vocational Content of a Junior High School Course, L. R. Alderman, superintendent of schools, Portland, Oregon.

Recent Changes in the Philosophy of Vocational Education, Henry Suzzallo, Seattle, Washington.

The Training of Teachers for Vocational Schools, Frank H. Shepherd, Corvallis, Oregon.

The Relation of Practical Arts to Science, John Francis, Columbus, Ohio.

Discussion lead by Edwin R. Snyder, Sacramento, California.

Industrializing the Manual Arts, George H. Jensen, Stockton, California.

The Growth of Art in the Schools and in Industry, Arthur Wesley Dow, Professor of Fine Arts, Columbia University.

The Relation of Art to Vocational Education and Manual Training, Ira Griffith, Columbia, Missouri.

Discussion lead by Ben W. Johnson, Seattle, Washington.

MANUAL TRAINING TEACHERS MEET.

The Manual Training Teachers of Union County, New Jersey, held their annual meeting May 16th, at Plainfield, N. J. Mr. E. A. Reuther, assistant commissioner of industrial education, presided.

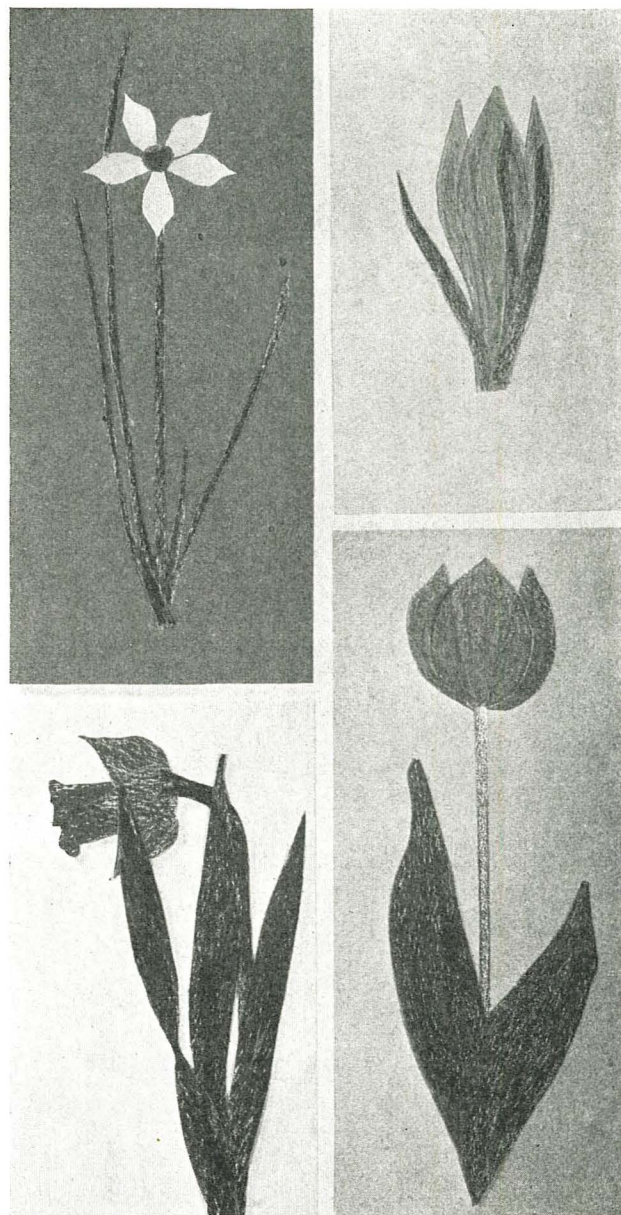
The first address of the general session was that by Mr. Reuther on the topic, "How Can the Schools Help in the Present Crisis?" Mr. Reuther laid particular emphasis on the home garden movement and the part which the manual training teachers should take in aiding the work. Plans were discussed for the formation of a junior industrial army. Similar talks were given by Supt. H. M. Maxson of Plainfield and Supt. A. L. Johnston of Union County.

At the sectional meetings, domestic science, manual training, drawing and other subjects were considered in various phases. Miss Lucille Jackson discussed the possibilities of food conservation and also led in an argument relative to the value of a practice cottage. Miss Lucille Haines of the New York School of Fine and Applied Arts, who spoke at the drawing section, gave an interesting talk on the work of the New York schools. At the subnormal children's section, Miss Alice Leigh and Mr. O'Brien spoke on the possibilities of gardening for these classes.

At the business session the following officers were elected: President, Arthur F. Hopper, Plainfield; vice-president, M. J. Corcoran, Elizabeth; secretary, Miss Mary E. Decker, Plainfield; treasurer, Miss Elizabeth Pierce, Cranford.

SCHOOL CRAFTS CLUB MEETING.

The School Crafts Club held its regular round-table meeting on Saturday evening, April 14th, at the rooms of the



Paper Cuttings and Crayon Coloring, Grades I-IV, Cranston, R. I.
Miss Beatrice L. Hall, Supervisor.

American Society of Mechanical Engineers in New York City. Pres. M. W. Haynes presided.

The sessions, which opened at 8 o'clock, consisted of six discussions on arts and crafts, elementary school work, junior high school shopwork, high school work, mechanical projects and recreation work for the summer. Mr. Morris Greenberg opened the meeting with a talk on "The Art Side of the Printing Teacher's Work." Mr. J. H. Constantine, who followed, discussed "Manual Arts in the Gary Plan." The course, for the first six years, he said, is based on that of the Speyer School and is the same for both boys and girls. The subjects include food, shelter, clothing, machines, tools and weapons, and seek to bring the home and the school into closer touch. Beginning with the seventh grade, the work for boys and girls is given separately, boys taking shopwork and girls cooking and sewing. Practical work for the school is undertaken by all the classes and manual and academic subjects are correlated.

"Shopwork in the Junior High School" was taken by Mr. Clyde A. Bowman. The population of the junior high school, according to Mr. Bowman, is made up of all the pupils eligible in a very liberal selection. The school should offer its service in science, industry, aesthetics and civics, so that the student

may have a clear understanding of social and industrial life, with opportunity for expression and special achievements. The selection of shop activities and the shaping of the course should be governed by what the boy demands in perspective, information and skill. For the people as a whole, the training offered must be in the direction of trades and occupations of the community, rather than in desirable but possibly unattainable positions. The character of the work should be governed by coherent group activities in three or more lines, by emphasis on special activities, by practical work offered in the shop, and by opportunity for semi-specialization. Mention was also made of the content of type lines of work, standards to be attained, productive work and the use of charts to present industrial fields and lines of progress.

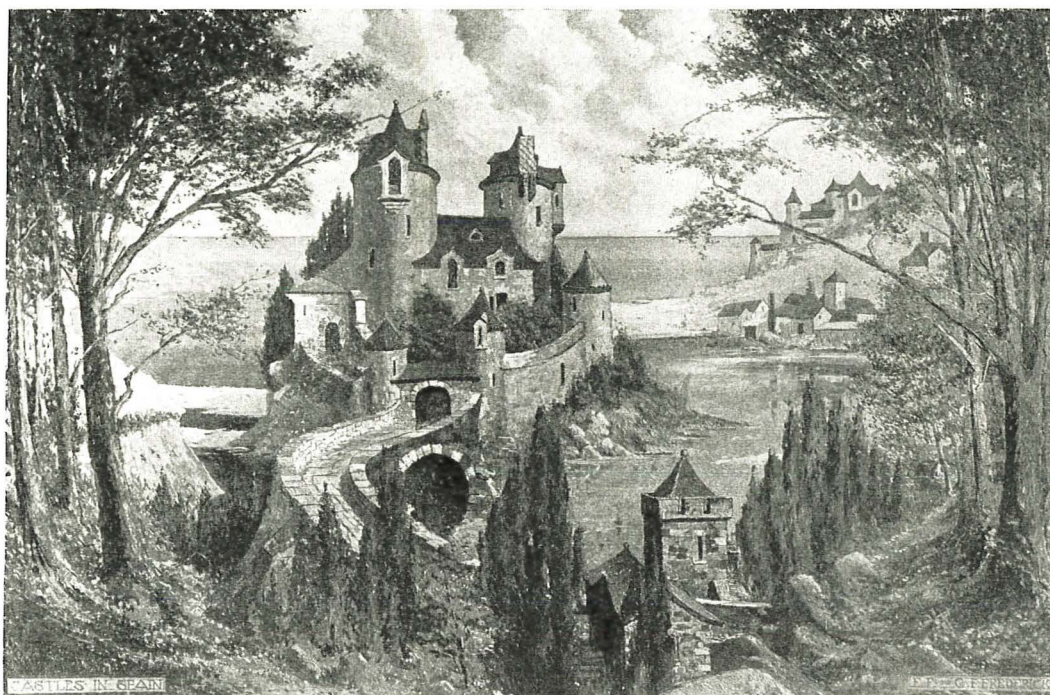
WAR ACTIVITY OF SHOP TEACHERS.

To the Editor:

In these days of feverish activity and anxiety in preparation for the war, the thought, no doubt, comes to many a shop teacher, just as it did to me, as to what he, the shop teacher, can do as his contribution toward the coming on of the war.

There are many things that a teacher can do in the way of raising money for Red Cross work and the following are some of the things that can be done.

1. In the future, when a boy spoils a piece of lumber, instead of giving him a piece gratis, fine him two or three or five cents for a new piece and make the boy put the fine in the "Red Cross Box."



"CASTLES IN SPAIN."

Painted by Frank L. Frederick, Director Trenton School of Industrial Arts, assisted by his son, George F. Frederick as an over-mantel decoration for the library of the Junior High School Trenton, N. J.

The fourth topic, "Illustrative Material of the High School Shop Teacher," was discussed by Mr. J. A. Levy. Lack of organization has been the cause of much criticism of shopwork and Mr. Levy showed definite methods for solving this problem. He showed mounted pictures, clippings, magazine articles, lesson plans and question sheets, all carefully indexed and filed for ready reference. Mr. Levy pointed out that with good working models, monitors and supplementary reading, the student becomes thoroly familiar with industrial processes. While all these may appear to take too much valuable time, it has been proven that eventually a saving in time has been made and greater efficiency made possible. Mr. A. L. Combes, who spoke on "Mechanical Projects," described the making of a simple electric motor and a sheetmetal motor boat.

"Craftsmanship in the Summer Camp" was taken by Mr. Ezra Putnoi. Mr. Putnoi divided his subject into: Why?; Equipment; Organization; How to make popular; What to make. He argued that a shop at camp is essential because it is a means of self expression and development. It is practical and a great diversion on a rainy day. The necessary equipment for 15-year-old boys would cost about \$200. The hours should be short, attendance compulsory at least for the first week or two, and the work should be individual and broad in scope. Credits are advised toward prize tents for things made to equip or beautify them, and medals may be given for fine craftsmanship. Some fine models were exhibited by Mr. Putnoi showing work done at Camp Sagamore on Lake George, with which he has been connected since 1912.

2. Ask each boy to donate one of his term's projects to a "Red Cross Sale" and then set a day on which the public can be invited to come and purchase a footstool, knife box, bookrack, towelroller, or what not. It will not take much urging to get the boy to part with one project and by getting them and their parents interested you will not only be doing the Red Cross but also your school a good turn.

3. An interclass athletic meet can be arranged and an admission of ten cents charged. This sort of competition is always sure to arouse enthusiasm.

4. A newspaper day can be held. On this day pupils are asked to bring in old newspapers and magazines. If the element of competition is injected by having one class try to bring in more than another, a greater quantity of papers will be obtained and, of course, more money realized.

5. Get the members of your class to sell peanuts, lolly-pops, gum, chocolate, and other refreshments at school or local ball games. In this way a tidy sum will soon be realized.

The girls can help too, not only in some of the ways indicated above, but they can prepare a luncheon for the teachers, and students, and by charging a quarter per plate they can realize a handsome profit. Also they can make cakes or pies and raffle them off at so much per chance.

These are some of the things that can be done and in fact we have done them all in our school, toward raising money for Red Cross work. If you cannot do anything of a more military nature, you can do some of the above things and so do your little bit. As President Weyh, of the New York Shopwork Teachers' Association says, "Be a Cog and Mesh

In" in other words, let us all put our shoulders to the wheel—let us all do all we can. If you are looking for something worth while to do, do some of the above things.

—William A. Carter.

FOOD CONSERVATION IN VINCENNES, IND.

The school children of Vincennes, Indiana, have been organized into a "Food Army" under the direction of Mr. J. I. Sowers, Supervisor of Vocational Education.

The "army" has been called into existence as a war measure, in response to the call of President Wilson, and its especial objects will be:

1. To cultivate all available vacant land within the city and as far as may be possible within the county.
2. To act as a labor exchange in placing high school students upon the farms.
3. To instruct housewives in the canning, preserving and drying of foods.
4. To give lessons in economical cooking and buying.
5. To teach plain sewing, and especially the making over of old garments.

In working out the plans for the service of the "army" more than 320 vacant lots in the city have been put under cultivation. The schools have obtained cultivation contracts from the owners, who have given the land without a rental charge. The schools provide for the plowing and have put the land in shape for planting. Neighboring families who have signed cultivation contracts, have been assigned to the lots to cultivate the land under the direction of the garden director. The schools have supplied \$525 worth of seed, to be paid for by the respective families by August first.

Two boys' camps have been established near the city. One camp consists of 30 boys, who are cultivating a 50-acre tract of land, and the other includes ten boys and a cook who are working as farm laborers.

Municipal gardens have also been established on a five-acre tract, donated by the Baltimore and Ohio Railroad Company. A group of boys from the junior high school is cultivating this garden.

During the summer, it is planned to carry on canning in the school kitchens. Girls' clubs have been formed to take charge of the work of canning and drying food, under the direction of two expert instructors. These same instructors will also direct housewives in canning and will conduct classes in cooking and sewing and in making over old garments.

In conducting the work of the Vincennes Food Army, Mr. Sower has made use of the school print shops for the preparation of dodgers, contract blanks, and report blanks. Every department of the school shops has been co-operating to make the "food army" a success.

WAR SERVICE IN BRATTLEBORO.

To the Editor:

The boys of Vermont are reading with intense interest every report that comes to hand of the work of their fellows thruout the country who are doing their share in what might be called the "Our Bit" movement. We are glad to say that they are not stopping there, but that nearly every boy has his plot of ground and is giving it his best efforts.

For the benefit of those boys who had no garden plots at their disposal, the citizens of Brattleboro donated three plots of ground to be divided into gardens each containing one or more one thousand feet units. One hundred and fifty such plots were quickly taken. In order to make the pupils realize the importance of the thing they were undertaking it was thought advisable to have a formal opening of each plot with a short address and flag raising.

The Manual Training Department was asked to furnish the flag poles for the occasion. Five boys from one of our seventh grades went out into the woods, selected three straight saplings, each about 50 feet high, felled them, trimmed them and placed them by the road side ready for hauling. After the poles had been hauled to their respective locations, the ninth grade boys dug the holes, erected the poles and put in a substantial base of concrete at each location.

All classes above the third grade were present at the flag raising in their respective districts.

Respectfully,

Edwin M. Feney,

Supervisor of Manual Training.

Brattleboro, Vt., May 29, 1917.

NEW BOOKS.

Drafting Practice.

By O. R. Webb. 48 pages. M. L. Nolan & Co., Battle Creek, Mich.

This loose-leaf book of elementary drafting practice is intended for first-year high school students, for vocational schools and for beginners in night schools. It begins with the usual instructions on the use of instruments, etc. These instructions are followed by a course of exercises for a full year giving some instruction in lettering, orthographic and isometric projection, geometrical drawing developments in sheet-metal work, machine details and architectural drafting.

Electrical Construction.

Walter B. Weber. 130 pages. Price, \$1.25. Manual Arts Press, Peoria, Illinois.

Electrical work has come very prominently into the schools that offer vocational or prevocational courses. There is need of good, concise treatises on this line of work that can be put into the hands of the students. This is such a book. It is a loose-leaf book with board covers of note-book size. Every phase of practical work in electricity is very briefly but pointedly discussed and fully illustrated with simple line drawings. It should find favor among the high and vocational schools.

Manual Training Play Problems for Boys and Girls.

By William S. Marten. Cloth, 147 pages, illustrated. Price, \$1.25. The Macmillan Co., New York.

Mr. Marten has given us in this volume a rich body of material that should be most helpful in any school or any home where boys and girls attempt to do constructive work.

The "play problems" range all the way from the very simplest toys to the more complicated mechanical devices. There are garden tools, cigar-box furniture, roller-coasters, running grasshoppers, boats, traps, looms, etc. One of the most helpful things is the body of information and directions for securing and preparing materials for these constructions, without difficulty and almost without cost. It is a very suggestive book and should prove a genuine help in this line of work.

The Practical Cook Book.

By Margaret Willet Howard. Cloth, 152 pages. Price, 72 cents. Ginn & Co., Boston.

While this book is essentially a collection of recipes, which have been tried out in schools and homes for their economy and the palatability of the foods, it is also a practical text for high schools and continuation classes. The aim is to make students think in working out the recipes and to select and combine foods into well balanced menus. The modification of recipes and menus to suit the particular dietary and economic needs of individuals and families is insisted upon. The book divides foods into six classes according to their chief dietary values: water, mineral salts, starch, sugar proteids and fats and oils, and presents the most common types of each. Additional chapters present frozen desserts, canning and preserving, foods for invalids and a large collection of unclassified recipes. The final chapter enters in great detail into the planning of meals.

Training for the Newspaper Trade.

By Don C. Seitz. Cloth, 163 pages; illustrated. Price, \$1.25 net. J. B. Lippincott, Philadelphia.

Modern newspaper work is here described in full detail—its rewards, its attractions, its requirements in the form of character, education and training. The author is an old newspaper man who has had a wonderful experience on the staffs of the largest metropolitan dailies. He has adopted the newspaper style in the book and has written—not ornately or slovenly, but simply, directly, graphically. The book will attract any live boy or girl and will easily become a source of inspiration to any young man who has an inclination to take up newspaper work as a vocation.

PROBLEMS AND PROJECTS

The Department of Problems and Projects, which is a regular feature of the *INDUSTRIAL-ARTS MAGAZINE*, aims to present each month a wide variety of class and shop projects in the Industrial Arts.

Readers are invited to submit successful problems and projects. A brief description of constructed problems, not exceeding 250 words in length, should be accompanied by a good working drawing and a good photograph. The originals of the problems in drawing, design, etc., should be sent.

Problems in benchwork, machine shop practice, turning, patternmaking, sewing, millinery, forging, cooking, jewelry, bookbinding, basketry, pottery, leather work, cement work, foundry work, and other lines of industrial-arts work are eligible for consideration.

Drawings and manuscripts should be addressed: The Editors, *INDUSTRIAL-ARTS MAGAZINE*, Milwaukee, Wis.

THREE-FOLD SCREEN.

N. B. Zane, State College, Pennsylvania.

This project is offered as one giving the student an opportunity for design and construction based on a given style of ornament. In this case, with a square of tapestry of distinctively Chinese character for a motive, appropriate carved forms were chosen from museum post-cards as sources of Chinese suggestion. The horizontals are mortised into the poles and the carving planned for simple tool work, mostly of straight lines. Pieces were glued to the ends of the poles to provide necessary width for terminal forms.

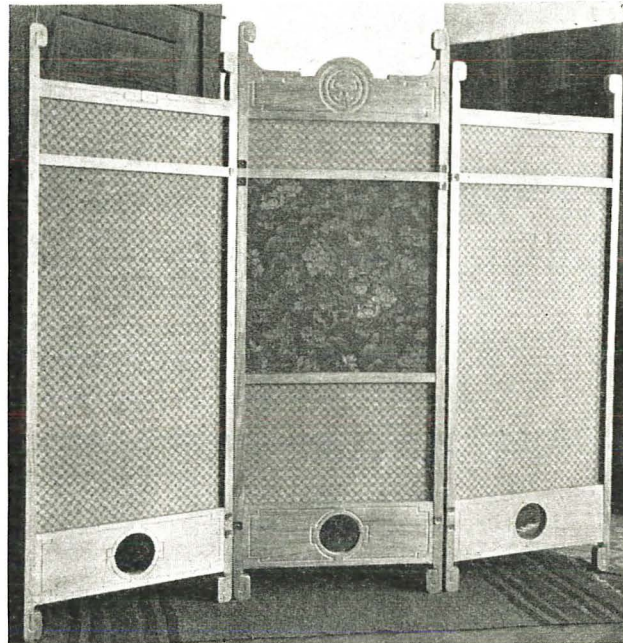
The center top panel is carved with a Chinese emblem of felicity as shown in the detail drawing. A double-faced tapestry of a small all-over pattern, repeating the dominant hues of the richer square, was chosen for the cloth panels with the exception of the center one in which duplicate squares were fastened back to back on the stretching surface.

The screen is constructed of figured gum. It is finished with a rubbing of fumed oak stain, then given a thin coat of shellac and waxed.

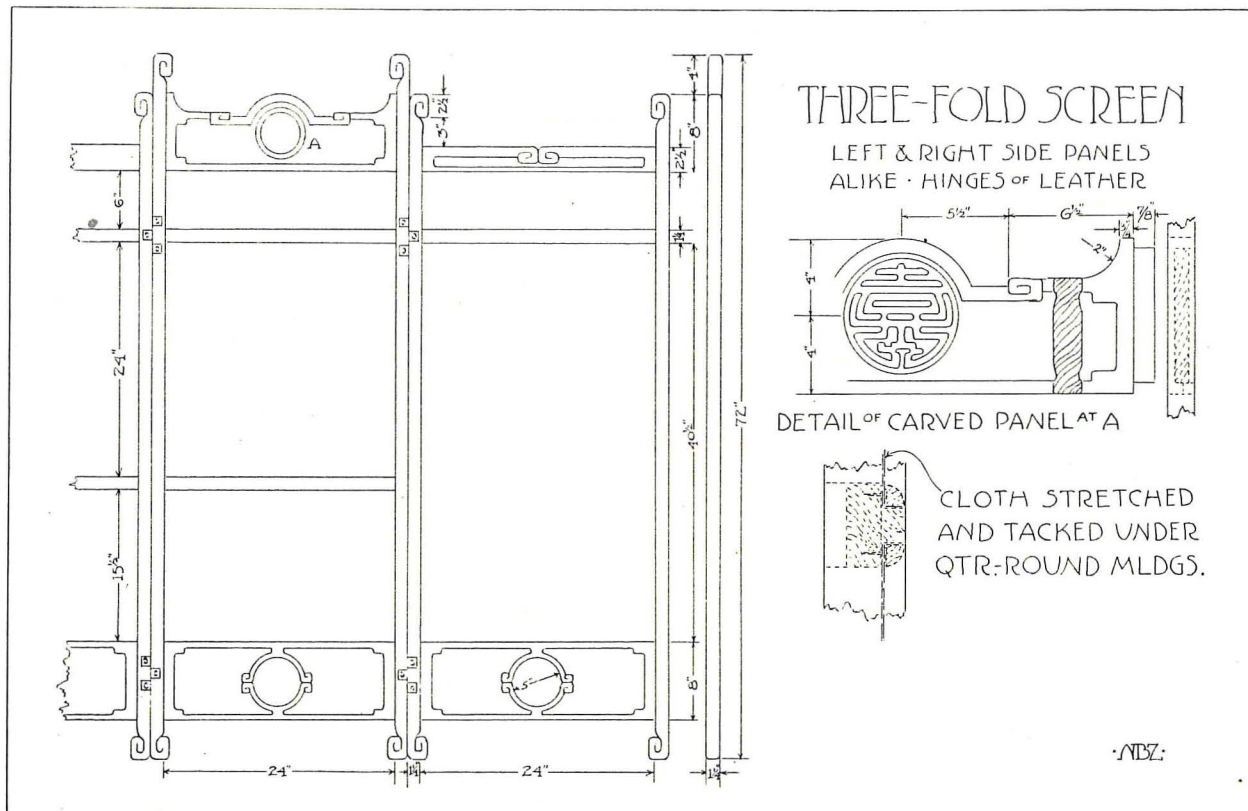
COMBINED LUMBER AND PROJECT STORAGE.

J. P. Pinney, Mishawaka, Ind.

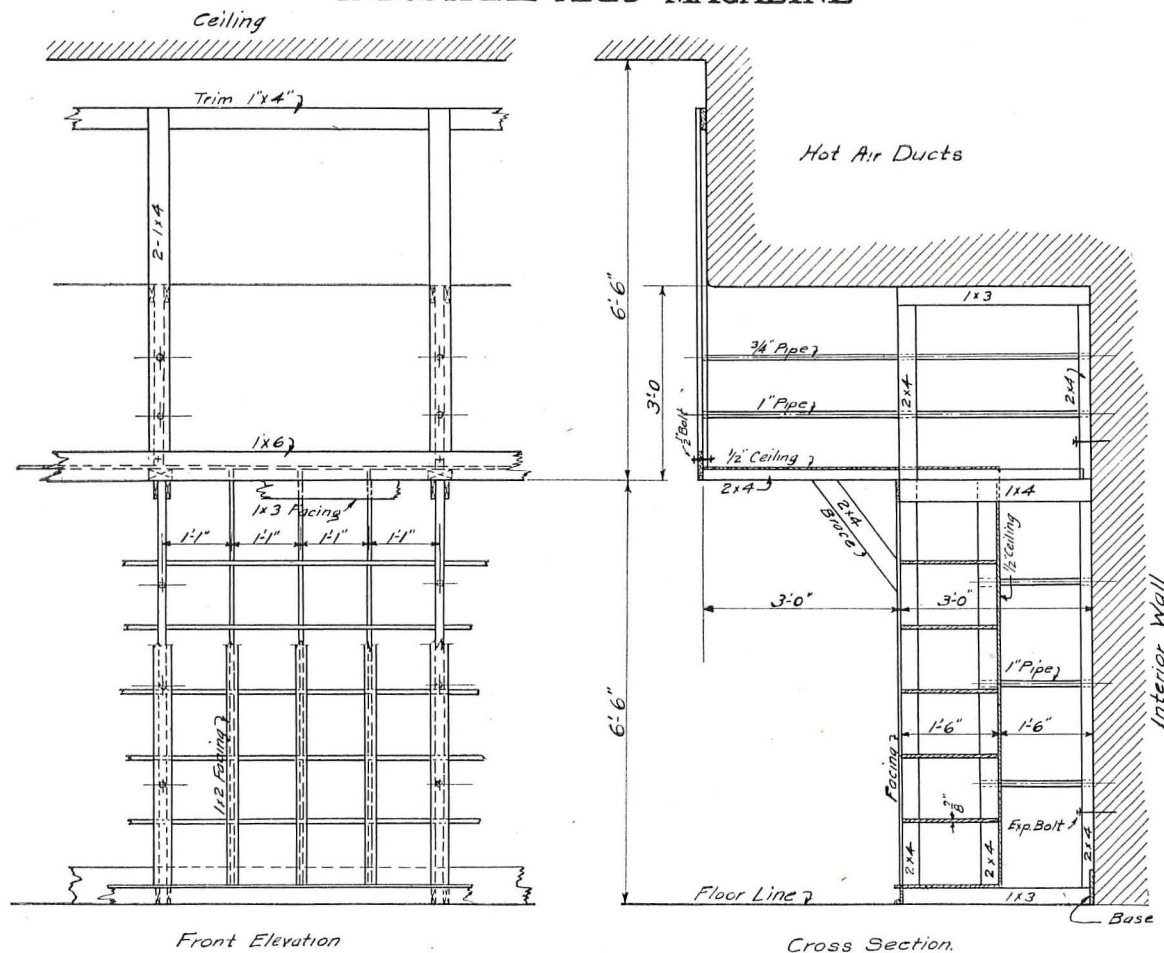
In this issue of the *Industrial-Arts Magazine*, I am presenting to its readers a solution to one of the many problems that confronts nearly every manual training teacher of the school where ample provision for the efficient teaching of manual training has not been considered by the architect. In a school building of this kind one of the basement rooms



A Chinese Screen.



DETAILS FOR CHINESE SCREEN.



DETAILS OF SHELVES FOR LUMBER AND PROJECT STORAGE.

is usually set apart for the wood shop. The room may have sufficient floor area for the benches and machinery but no provision has been made to take care of the raw material and to protect the finished product.

This was the problem that confronted the writer nearly three years ago and it was solved in the manner illustrated by the accompanying drawing and photograph. Our wood shop, like the majority of schoolrooms, was lighted from one side, equipped with a blackboard along one of the end walls. The machinery occupied the opposite end, leaving the longitudinal inside wall available for the storage rack shown.

This storage was constructed fourteen feet in length for the purpose of storing sixteen feet lumber and anything shorter. This length and height provided vertical surface of sufficient area for 72 pigeon-holes as shown by the side elevation. The balcony portion that overhangs the benches does not depend on the overhead trim for its support as the reader might imagine at first glance, but instead, on the pipes. These are considered strong enough to carry the overhanging load, as soft woods only are stored in this part.

Pipes were used for the lumber supports as they occupied less space for their strength than wooden supports and also offered less friction. The bents shown in the cross section were spaced as indicated, as that distance seemed to work out best for different lengths of lumber. In building a storage of this kind it must be borne in mind that only a little over one-half of the available wall length can be utilized as the lumber cannot be pushed in behind the pigeon-holes.

SOME DRAWING ROOM KINKS.

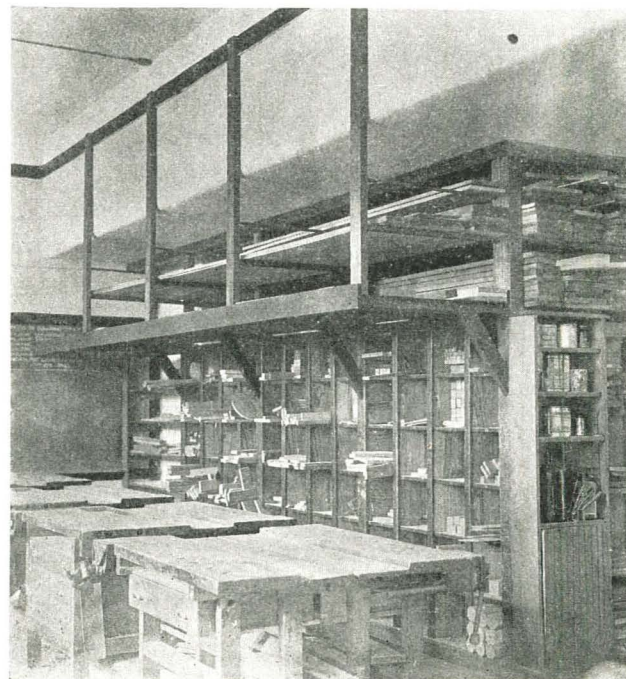
E. M. Wyatt, Houston, Tex.

(Continued)

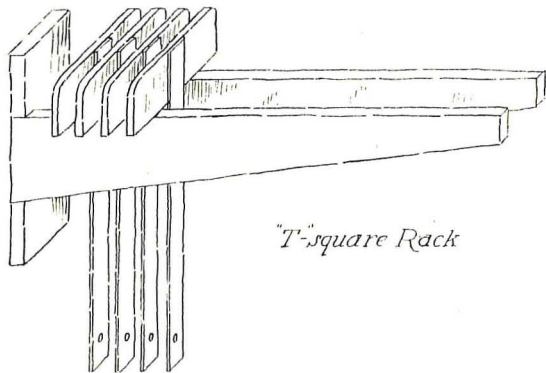
The T-square rack shown in Fig. 5 is a very satisfactory one where T-squares are not kept in lockers or on the benches.

Most drawing teachers have experimented from time to time with various T-square and parallel rule devices for drawing on a blackboard. They have usually discarded

them as cumbersome. Here is one guaranteed not to be cumbersome and never to get out of order—Fig. 6. Rule the blackboard in one-inch sections, using a straight edge and knife point. A knife is the proper marking tool whether the blackboard be slate, composition or wood. Only a light, fine line is necessary as the line will fill with chalk dust and



The Shelves in Use.



"T-square Rack"

Fig. 5.

make a permanent distinct line. A double or heavy line every eight or ten inches will help in drawing by aiding in counting the lines. The drawing is done freehand as with ordinary section ruled sketching paper.

Another blackboard device is one for perspective sketch-

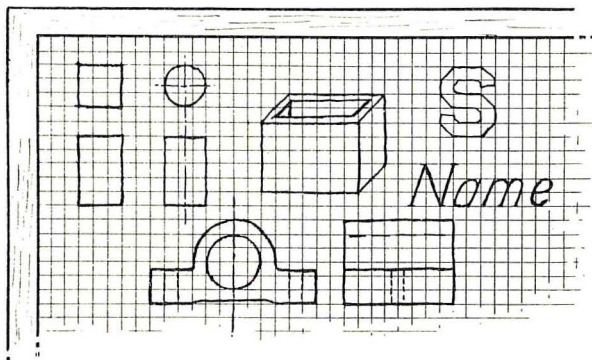


Fig. 6. A Section Ruled Blackboard.

ing shown in Fig. 7. An ordinary chalk line is held taut between a nail and a screweye by a weight, as shown in the figure. The nail and screweye are located at fixed vanishing points. The weight should be quite heavy so as to give some stiffness to the line. Drawing is done freehand

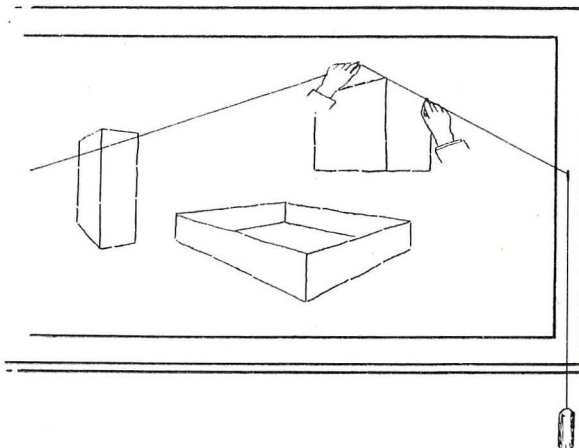


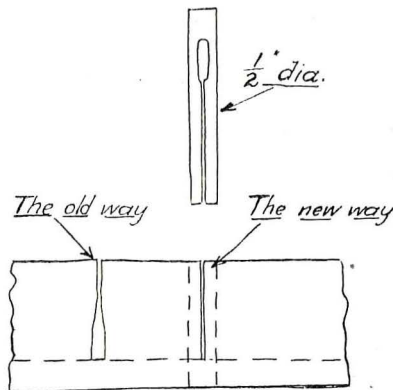
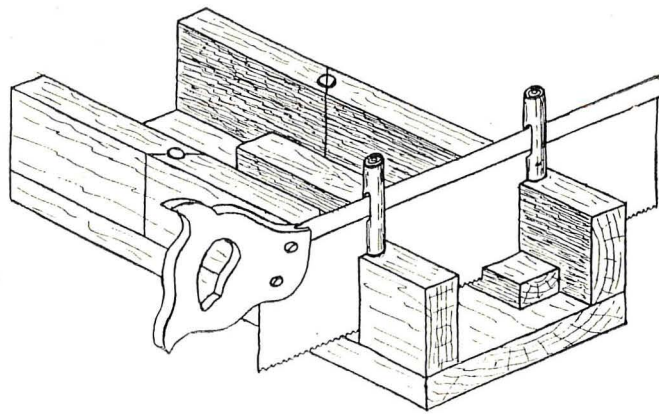
Fig. 7. A Blackboard Perspective Sketching Device.

by ruling along the taut line or by snapping the chalked line and retracing the resulting line on the blackboard.

A SHOP KINK.

C. S. Goldsmith, New York City.

The saw kerf in the ordinary miter-box soon wears so large that the saw wobbles, and accurate work is no longer possible. This is caused by the saw teeth wearing away the sides of the kerf.

Detail of
Improved Saw Kerf
for Miter Box.

A simple remedy is to bore $\frac{1}{2}$ " holes down thru each side of the miter-box, and then insert dowel pins as shown. The dowel pins rise and fall with the saw, thus preventing the saw teeth from wearing away the wood.

CLOTHES DRYING RACK.

Louis M. Roehl, Milwaukee County School of Agriculture,
Wauwatosa, Wis.

A woodworking project which has created a great deal of interest among our boys but more particularly the women folks who have visited our woodworking shop is the clothes drying rack which is shown in the accompanying working drawing.

The particularly commendable feature about the rack is that by use of the sash cord by which it is suspended it may be lowered making it handy for placing clothes on it and raised to the ceiling of the room where the hanging clothes are out of the way and where the warm air of the room facilitates the drying.

The rack may be fastened to a window or door casing or on the wall if a more convenient place is available. If it is fastened to the wall, it should be placed on a studding and screws used which are long enough to go thru the plaster and well into the stud.

It should be made of birch, maple or oak so that the arms will be strong enough to carry the weight of wet clothes and that the screws won't draw out.

The rack has a range of four feet so it may be placed on the wall 2' 6" from the ceiling and raised to within 6" of the ceiling and lowered to four feet from the floor of a room which has an 8' 6" ceiling.

At least three screws should be used in fastening the rack to the wall; two near the top and one at the bottom of the wall member.

The arms may be held with round head blued screws but stove bolts are preferable as the screws are apt to become loose.

Following is a stock bill:

NOW, ARE THERE ANY QUESTIONS?

This department is intended for the convenience of subscribers who may have problems which trouble them. The editors will reply to questions, which they feel they can answer, and to other questions they will obtain replies from persons who are competent to answer. Letters must invariably be signed with full name of inquirer. All questions are numbered in the order of their receipt. If an answer is desired by mail, a stamped envelope should be enclosed. The privilege of printing any question and reply is reserved. Address, *Industrial-Arts Magazine, Milwaukee, Wis.*

Scroll Designs.

486. Q.—Can you refer me to a concern or concerns who make designs for a foot-power scroll saw? If I am not mistaken there used to be a concern either in Massachusetts or Connecticut, but I do not remember the address nor the name.—O. J. D.

A.—H. L. Wild, 171 Avenue "A," New York, N. Y., and the Millers Falls Company, 28 Warren St., New York City, are the largest dealers in scroll saw designs and supplies.

Fuming Oak.

531. Q.—Will you kindly advise me as to fuming oak? I know concentrated ammonia is used but know that other chemicals help to bring the desired results. What they are and quantities to use is what I do not know.—M. B. H.

A.—Apparatus: (a) Fuming box.

1. Construct frame of 1 inch by 4 inch material to form sides of a box 6 feet by 6 feet by 8 feet. These sides should be made separately and afterward screwed together to form a frame. Provision should be made for door in one end as well as at least one sash. On top of this frame should be screwed the top frame. All corners should be cross-braced for two feet each way. Cover all frames with unbleached muslin, double stitched on the seams and coated with two coats of water glass and one coat of boiled oil containing one tablespoonful of Japan drier per gallon of oil. This will render the frame gas-proof.

2. Ammonia should be contained in a five-gallon oil can with a brass pet cock to regulate the flow. This should be placed on top of the frame and a small rubber tube connected with the pet cock and allowed to go thru a hole bored in the frame so as to allow the ammonia to run down in a frame made of 1 inch by 2 inch stock grooved on its upper edge with a half-inch channel. This frame should be so arranged that the upper slant empties in the one next below it by being slightly inclined downward, the second one coming back at a still lower slant until the last groove carries the waste ammonia into a pail. The flow should be regulated to the size of a quarter-inch stream. Work should be placed in the box and the door closed and the cracks pasted over with paper. The ammonia should be regulated before leaving the box to insure that everything works properly.

(b) Preparation of work for fuming.

1. Sponge the work in cold water. Dry and sand smooth.

2. Coat the work with solution made of one-half ounce each of tannic and pyrogalllic acids dissolved in one gallon of water. For darker colors increase these amounts of acids up to three ounces per gallon and if the red tones are more desired than the brown increase the pyrogalllic acid rather than the tannic. These solutions should be applied with a rubber set brush, bound with a brass ferrule as the least bit of iron from the brush or other source will cause black spots or stains to appear on the work. If no other material is at hand a sponge may be used in place of a brush. The work should be allowed to dry altho, if it is placed in the fuming box while still wet or damp, it will fume very quickly but will require some experimenting in order to determine the amount of time necessary to produce a definite color. Wet or dry, according to the method used, the work should be subsequently sandpapered after fuming. Either of two methods may now be followed, according as experimental work has shown best suits the individual taste of the operator. An entirely different color, which is considered by some to be the richest, may be produced thru the use of boiled linseed oil and turpentine, half and half. This should be brushed on in a thin even coat and allowed to dry twelve hours, followed by a coat of orange shellac, reduced one-half with alcohol. After drying this should be sandpapered smooth with 00 paper and the work finished with Moeller & Schumann Hilo

Flat Varnish, preferably two coats. If the effect produced thru the use of oil is not desired, omit the oil coat, shellac and varnish as mentioned above. In the case of any sap streaks appearing in the wood, they may be shaded out by sponging the darker portions adjacent to the sap streak with a little gasoline or turpentine and then staining the sap streak itself with an oil stain made from one pint of turpentine or benzole, one cup of boiled linseed oil, one tablespoonful of dark Japan drier and enough asphaltum varnish to produce a good brown color. This should be applied with a two-inch bristle brush which has been cut in the form of a skew chisel, using the shorter bristles on that side of the sap streak nearest the darker wood, thereby allowing the longer bristles to carry more stain into the light portion of the sap streak where it is more required.

It is suggested for the experimental work and the study of the different effects which fuming produces on oaks or other woods—since fuming is not limited to any particular wood under this process—that a box be made with a glass top and at least one glass side so that the effects of the ammonia may be studied in relation to the different densities of the acid solutions, the length of time required to produce the color sought, and the differences in color which occur thru the use of wet and dry samples under the action of the gas.

A mistake which a great many are making at this time, is to attempt to fill the wood. The fumed oak as originated by Gustav Stickley and the standard as adopted by the Grand Rapids Furniture Manufacturers' Association is a full bodied rich brown with plenty of life in the high lights and with the pore of the wood showing itself only as a result of the small shadows which develop in the hollow of the open pore.—Ralph G. Waring.

Chemical Magazines.

653. Q.—Will you please give me the names of some chemical magazines, prices and addresses?—R. L. S.

A.—The following is a list of magazines which should prove helpful to you:

Journal of Physical Chemistry, Ithaca, N. Y. Mr. W. D. Bancroft, editor and publisher. Issued monthly except July, August and September. Subscription, \$4.00.

Chemical Abstracts, Easton, Pa. Published by The American Chemical Society. A. M. Patterson, editor. Semi-monthly. Subscription, \$6.00.

Journal of Industrial and Engineering Chemistry. Monthly. Published by The American Chemical Society. M. C. Whitaker, editor. Subscription, \$6.00.

Journal of the American Chemical Society, Easton, Pa. Wm. A. Noyes, editor. Published by the Society. Monthly. Subscription, \$6.00.

Finishing Birch.

656. Q.—How can I best obtain a dark mahogany finish for birch and ebony for the same wood?

Also, will you please advise a method of finishing a table made of birch to be finished in the Adam style?—C. C. K.

A.—The production of mahogany on birch calls for the consideration of two important questions, which are: First, is a brown undertone most desirable, or second, is a red undertone most desirable? Taking the first question, we will produce the brown undertone in the following manner:

In one gallon of hot water dissolve two ounces of tannic acid, one ounce of pyrogalllic acid. Apply this as a first coat. Now make up a solution of copper sulphate, one-half ounce plus one quart of water. Now add ammonia until the white precipitate redissolves to a permanent deep blue, leaving the ammonia in slight excess. Add one ounce of this solution to each pint of the following alkaline solution: Sodium carbonate, one ounce; potassium bichromate, one ounce; water, one gallon. Mixing these two solutions in the

proportions indicated will give us stain No. 2. Before applying the second coat of stain, it would be best to sandpaper the work lightly with 00 paper. Apply a good coat of stain No. 2, remembering that the use of water stain requires the application of all the material that the wood can soak up. Let this stand over night until the carbon dioxide of the air has produced a deep brown. Sand the work thoroly and apply a last coat of stain, made by dissolving two ounces of Bismark brown in one gallon of boiling vinegar. Make the solution in granite or glass ware. After these solutions are once made up and designated as standard, they can be reduced in any predetermined proportion in order to produce any desired variation in color. If it is desired to produce red tone undercoat, use the Bismark brown solution first, followed by the tannic acid and the carbonate-ammonia solution. In all work of this kind, it is best to try the colors on wood samples at least five by eight inches and when complete give at least one coat of white shellac before judging the color.

Birch, while possessing a very small pore, nevertheless requires some kind of filler. This can be made by using two very thin coats of white shellac, slightly tinted with a very little Bismark brown dissolved in alcohol. If the shellac is not tinted, a gray bloom will appear beneath the varnish and spoil the appearance of the finish. Sand the shellac carefully when well dried, dust and then coat with three or four coats of a good varnish, allowing one week between coats for drying. Sand the first coat with 00 paper, rub the last two with F pumice stone, felt pad and water, polishing with rotten stone if desired and cleaning up with a good oil polish.

The ebony finish on birch can best be produced in the following manner. Prepare a boiling solution of log wood extract in the proportion of two ounces of extract to one gallon of water, to which has been added one ounce of sulphite of iron. If this solution is applied boiling hot, the result will be an intense black. The work should be well sanded, after the stain is thoroly dried, and then given a coat of hot raw linseed oil, which has been reduced with one-third turpentine. This oil finish should be dried over night and then the pores of the wood should be rubbed full of ivory drop black which has been ground in oil. Let this dry over night and clean up the entire surface with black wax. If the wood has been very carefully sandpapered to a perfect surface and these directions followed with care, an imitation of ebony will be produced almost impossible to detect from the genuine.

In finishing a table of birch made in the Adam style, it will be best to produce a color known as Toona mahogany. This is a full bodied, rich russet with very little red and can be produced by using the tannic and pyrogallie acid solutions, in which one ounce of each acid is used to the gallon of water. The second stain is made from one-half ounce of sodium carbonate plus one-half gallon of water and one-half ounce of potassium bichromate plus one-half gallon of water. It should be noted, by the way, that all stains should be kept in glass or earthen ware. The third color consists of one-half ounce of Bismark brown dissolved in one gallon of boiling vinegar. These stains should be applied in the order given and No. 2 can be applied before No. 1 is entirely dry, but 24 hours must intervene between coats 2 and 3. When stains are given in formulae of this type, apply carefully as given. Do not attempt to save time by dumping the solutions all into one as has been attempted in the past. Chemical reactions which occur on the wood when produced in the order given are quite different from those which develop when the solutions are combined in a bottle. With a wood as tricky as birch, the short cuts to a good finish are very few and as a rule should not be attempted. This troublesome wood will break down practically all anilines in the presence of sunlight, unless the color is mordanted, or set, thru the use of the proper chemical. The finish from this point on calls for the shellac and varnish the same as for the dark mahogany given above.—*Ralph G. Waring.*

Stone Cutting Trade.

657. Q.—Is it possible for you to inform me as to the following: (1) Are there any schools of any kind in existence in the United States, where stone cutting trades are taught? (2) Is the business growing or receding? (3) Have you any data concerning trade unions organized in the stone working industry?—*S. B. A.*

A.—1. There is no school in the United States for stone cutters or quarrymen. The Odborna Skola at Horice, Bohemia, is the only stone cutters' school in Europe and is, so far as we can learn, the only school in the world. The trades unions have apparently not looked with favor upon education of stone cutters and there does not seem to be any desire on the part of quarry owners or master stone cutters to increase the trade education of apprentices and journeymen.

2. There is a very distinct need in this country for stone draughting which may be taught in technical schools. The stone draughtsman takes the architect's plans for the involved stone work of a building and makes the drawings and patterns for each individual stone. The work requires careful training in plane geometry and considerable technical knowledge of stone quarrying, architecture and building. The demand for good stone draughtsmen is constant and the supply is extremely limited.

The stone industry, on the whole, is growing, according to Mr. Frank W. Hoyt, editor of *Stone* and a leading authority on the subject, and the output of American quarries and mills has more than doubled during the past ten or fifteen years. During the same period, the number of stone cutters has not been increased but has been greatly decreased because of the use of the stone planer and other labor-saving devices. According to the United States Labor Statistics, there were 54,460 stone, granite, marble and brick cutters in the United States in 1900. In 1910 the number was reduced to 35,737. It is estimated that there were between 20,000 and 25,000 stone cutters in the trade in 1900. Since this the use of the stone planer and other machinery has been extended to an amount of work equivalent to ten thousand hand planers. You will find a very good discussion of this in the *Journal of Political Economy* for May, 1916 (by Mr. G. Barnett, vol. 24, pp. 417-44).

While the actual number of stone cutters has been greatly reduced, the working conditions in the trade have been improved. The stone cutters receive from \$4 to \$5.50 for an eight-hour work day, and quarry men in responsible positions receive from \$30 to \$40 per week. The periods of unemployment have been reduced in the trade by the practice of employers in building substantial sheds, heated with steam, to make winter work possible. The hygiene of the trade has also been improved by providing larger space and reducing the dust evil.

3. The stone cutters are united in an organization known as the Journeymen Stone Cutters' Association of North America. Applications for information concerning the unions are not answered by the national officers at Indianapolis.

Course in Heating and Ventilating.

672. Q.—Will you kindly give me a list of technical schools in which I could take a course in heating and ventilating by correspondence?—*E. F. T.*

A.—The National School of Heating and Ventilation, New York City; International Correspondence School, Scranton, Pa., and the American School of Correspondence, Chicago, Ill.

Service in the Philippines.

676. Q.—Will you kindly tell me where to write to get information about employment teaching industrial arts in the Philippine Islands?—*H. E. F.*

A.—United States Civil Service Commission, Washington, D. C. A circular of information containing the complete details of the examination is available. Further information concerning employment in the Philippine civil service may be had by addressing the Bureau of Insular Affairs, War Department, Washington, D. C.